

## MSc “Zero Defect Manufacture for a Circular Economy” programme

### - Study plans –

This document presents the general syllabi of all the MSc double degrees available within the EIT Manufacturing “Zero Defect Manufacture for a Circular Economy” 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 EITM Master Programme*

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

Please scroll down this document to find the different syllabi of the following available combinations.

#### *Available entry and exit combinations from November 2023 on*

ENTRY university	EXIT university
Alto University (Finland)	UNITN (Italy)
Alto University (Finland)	INP Grenoble (France)
INP Grenoble (France)	UNITN (Italy)
INP Grenoble (France)	Alto University (Finland)
UCD (Ireland)	Alto University (Finland)
UCD (Ireland)	INP Grenoble (France)
UCD (Ireland)	UNITN (Italy)
UNITN (Italy)	Alto University (Finland)
UNITN (Italy)	INP Grenoble (France)



## Zero Defect for a Circular Economy

- Study plan 2024/2026 -

*Entry university Aalto – exit university UNITN*

### 1<sup>st</sup> Entry year Aalto 2024-2025 or 2025-2026

Local up-to-date webpages for entry/exit university courses

Note: The course list below belongs to Curriculum 2022-2024. Aalto curriculum is renewed biannually. The new curriculum will be published in April 2024 at <https://www.aalto.fi/en/programmes/masters-programme-in-manufacturing/curriculum-2024-2026>. Minor changes are likely to occur.

Type of modules	Course code and name at Aalto	ECTS	Semester	Total credits	
	<i>Compulsory courses</i>				
TC	<a href="#">MEC-E1003 Machine Design Project</a>	5	1	10 ECTS	
	<a href="#">MEC-E1080 Production Engineering</a>	5	1		
SC	MEC-E1090 Quality Management and Metrology	5	1	10 ECTS	
	MEC-E1060 Machine Design	5	1		
	<i>Elective courses (select 25 ECTS)</i>				25 ECTS
	<a href="#">MEC-E7006 Advanced Manufacturing</a>	5			
	<a href="#">MEC-E7009 Design for Additive Manufacturing</a>	5			
	<a href="#">MEC-E6002 Welding Technology and Design</a>	5	2		
	<a href="#">MEC-E7001 Production Systems Modeling</a>	5	2		
	<a href="#">MEC-E7002 Manufacturing Methods I</a>	5	2		
	<a href="#">MEC-E7003 Manufacturing Methods II</a>	5	2		
	<a href="#">MEC-E7005 Advanced Casting Technology</a>	5	2		
<a href="#">ELEC-E8113 Information Systems in Industry</a>	5	1			
I&E	<a href="#">TU-E4100 Startup Experience D</a>	9	2	15 ECTS	
	<a href="#">LC-1317 Integrated Project Communication for MSc Students (o,w) **</a>	3	2		
	<i>Elective courses (choose 3 ECTS)</i>				
	<a href="#">TU-E4300 Introduction to Digital Business and Venturing D</a>	3	1		
	<a href="#">TU-C2080 Entrepreneurship Essentials *</a>	1	1		
	<a href="#">TU-C2090 Starting Up *</a>	2	1		
	<a href="#">MNGT-C1005 Finland works</a>	2	1		

\*) Online self-study courses that can be completed in any period / term, but we recommend these in the autumn term to secure sufficient background knowledge for Startup Experience in the spring.



\*\*\*) Integrated with Startup Experience; cannot be completed as a stand-alone course. This course is not mandatory for students who have completed a bachelor degree in Finland. The course fulfills the requirements of compulsory foreign language course in the degree. If you don't take this course, pick another eligible language course either in the autumn or in the spring term. Registration is required separately to both Startup Experience and Integrated Project Communication course.

## 2nd year UNITN\*

*Local up-to-date webpages for entry/exit university courses:*

[MANAGEMENT AND INDUSTRIAL SYSTEMS ENGINEERING | Course Catalogue, Università degli studi di Trento \(cineca.it\)](#)

Type of modules	Trento courses	ECTS	Semester	Total credits
TC	<a href="#">Digital production and logistics systems</a>	9	1	
SC	<a href="#">Engineering system design</a>	6	1	
I&E	<a href="#">Organizations, human resources and innovation</a>	10	1	
	<a href="#">Summer school (centrally organized by EIT)</a>	5	1	
MT	<a href="#">Master thesis + integration to master thesis</a>	30	2	

\* attendance to an Italian Language course (Level A1 CEFR )



- Zero Defect for a Circular Economy
- Study plan 2024/2026 –

### Entry university Aalto - Grenoble collaboration

#### Entry university Aalto – exit university Grenoble INP

#### 1<sup>st</sup> Entry year Aalto 2024-2025 or 2025-2026

Note: The course list below belongs to Curriculum 2022-2024. Aalto curriculum is renewed biannually. The new curriculum will be published in April 2024 at <https://www.aalto.fi/en/programmes/masters-programme-in-manufacturing/curriculum-2024-2026>. Minor changes are likely to occur.

Local up-to-date webpages for entry/exit university courses:

[Zero Defect Manufacture for a Circular Economy \(EIT\), Master of Science \(Technology\) | Aalto University](#)

Type of modules	Course code and name at Aalto	ECTS	Semester	Total credits	
	<i>Compulsory courses</i>				
TC	<a href="#">MEC-E1003 Machine Design Project</a>	5	1	10 ECTS	
	<a href="#">MEC-E1080 Production Engineering</a>	5	1		
SC	MEC-E1090 Quality Management and Metrology	5	1	10 ECTS	
	MEC-E1060 Machine Design	5	1		
	<i>Elective courses (select 25 ECTS)</i>				
	<a href="#">MEC-E7006 Advanced Manufacturing</a>	5		25 ECTS	
	<a href="#">MEC-E7009 Design for Additive Manufacturing</a>	5			
	<a href="#">MEC-E6002 Welding Technology and Design</a>	5	2		
	<a href="#">MEC-E7001 Production Systems Modeling</a>	5	2		
	<a href="#">MEC-E7002 Manufacturing Methods I</a>	5	2		
	<a href="#">MEC-E7003 Manufacturing Methods II</a>	5	2		
	<a href="#">MEC-E7005 Advanced Casting Technology</a>	5	2		
	<a href="#">ELEC-E8113 Information Systems in Industry</a>	5	1		
I&E	<a href="#">TU-E4100 Startup Experience D</a>	9	2		15 ECTS
	<a href="#">LC-1317 Integrated Project Communication for MSc Students (o,w) **</a>	3	2		
	<i>Elective courses (choose 3 ECTS)</i>				
	<a href="#">TU-E4300 Introduction to Digital Business and Venturing D</a>	3	1		
	<a href="#">TU-C2080 Entrepreneurship Essentials *</a>	1	1		
	<a href="#">TU-C2090 Starting Up *</a>	2	1		
	<a href="#">MNGT-C1005 Finland works</a>	2	1		



\*) Online self-study courses that can be completed in any period / term, but we recommend these in the autumn term to secure sufficient background knowledge for Startup Experience in the spring.

\*\*) Integrated with Startup Experience; cannot be completed as a stand-alone course. This course is not mandatory for students who have completed a bachelor degree in Finland. The course fulfills the requirements of compulsory foreign language course in the degree. If you don't take this course, pick another eligible language course either in the autumn or in the spring term. Registration is required separately to both Startup Experience and Integrated Project Communication course.

## 2<sup>nd</sup> year - Grenoble INP

*Local up-to-date webpages for entry/exit university courses:*

[Zero-Defect Manufacture for a Circular Economy Master's Program - Grenoble INP - Génie industriel, UGA \(grenoble-inp.fr\)](http://Zero-Defect Manufacture for a Circular Economy Master's Program - Grenoble INP - Génie industriel, UGA (grenoble-inp.fr))

Type of modules	Grenoble INP courses	ECTS	Semester	Total credits
TC (2 choices out of 3)	Multi-criteria Decision Aiding and Artificial Intelligence - 5GUC4202	5	3	10
	Smart analytics for big data - 5GUC3500	5	3	
	Virtual Reality for Industry 4.0 - 5GUC3319	5	3	
SC (1 choice out of 2)	Circular EconomiX - 5GUC4302	6	3	6
	Advanced Life Cycle Assessment - 5GUC4402	6	3	
I&E (all 3 mandatory)	Centrally organized summer school	5		14
	Operational excellence in R&D - 5GUC3700	5	3	
	Innovation challenge	4	3	
MT	Master thesis - WGUS4015	30	4	30

## Recap

Type of modules	ECTS in S1	ECTS in S2	ECTS in S3	ECTS in S4	Total credits
TC	15	20	10		45
SC	5	5	6		15
I&E	9	9	14		32
MT				30	30
Total	29	34	30	30	122



- Zero Defect for a Circular Economy

- Study plan 2024/2026 –

*Entry university Grenoble – exit university UNITN collaboration*

**1<sup>st</sup> year Grenoble – entry**

Local up-to-date webpages for entry/exit university courses:

[Zero-Defect Manufacture for a Circular Economy Master's Program - Grenoble INP - Génie industriel, UGA \(grenoble-inp.fr\)](http://grenoble-inp.fr)

Type of module	Grenoble courses (M1)	ECTS	Semester	Total credits
SC	Quality and Process Development - WGUS2054	3	S1	9 (3 S1, 6 S2)
	Production and Operations Management - WGUS1044	3	S2	
	Project on Data Analytics for Manufacturing - WGUS3022	3	S2	
TC	Sustainability in Industrial Engineering - WGUS1074	3	S1	36 (21 S1, 15 S2)
	Basic Economics for Sustainable Industrial Engineering - WGUS1014	3	S1	
	Product Development Project 1 - 4GMP1611	3	S1	
	Information Systems Management - WGUS2044	3	S1	
	Challenges of the production transition (GS)- WGUS7102	3	S1	
	Performance Evaluation of Production Systems - WGUS1065	3	S1	
	Data analytics for industrial engineering - WGUS2092	3	S1	
	Sustainable design and innovation management - WGUS3012	3	S2	
	Industrial Economics for Sustainable industrial Engineering - WGMS7028	3	S2	
	Research Project - 4GUC00E5	3	S2	
	Discrete Event Simulation and Optimization - WGUS8042	6	S2	
IE	Sustainable work and organization - WGUS2082	3	S1	15 (6 S1, 9 S2)
	French and intercultural communication S7	3	S1	
	Product Development Project 2 - 4GUP1901	6	S2	
	Inventive problem solving, bio inspired innovation - WGUS2071	3	S2	



## 2nd year UNITN

Local up-to-date webpages for entry/exit university courses:

[MANAGEMENT AND INDUSTRIAL SYSTEMS ENGINEERING | Course Catalogue, Università degli studi di Trento \(cineca.it\)](#)

Type of modules	Trento courses	ECTS	emes- ter	Total credits
TC	<a href="#">Digital production and logistics systems</a>	9	1	9 ECTS
SC	<a href="#">Engineering system design</a>	6	1	6 ECTS
I&E	<a href="#">Organizations, human resources and innovation</a>	10	1	15 ECTS
	<b>Summer school (centrally organized by EIT)</b>	5	1	
MT	<a href="#">Master thesis + integration to master thesis</a>	30	2	

\* attendance to an Italian Language course (Level A1 CEFR )



- Zero Defect for a Circular Economy

Study plan – Grenoble – Aalto collaboration

*Entry university Grenoble – exit university Aalto*

**1<sup>st</sup> year - Grenoble INP**

*Local up-to-date webpages for entry/exit university courses:*

[Please click here to get more details](#)

Type of modules	UCD courses	ECTS	Semester	Total credits
TC	Sustainability in industrial engineering - WGUS1074	S1	3	
	Basic Economics for Sustainable Industrial Engineering - WGUS1014	S1	3	
	Information systems management - WGUS2044	S1	3	
	Challenges of the production transition (GS) - WGUS7102	1	3	
	Performance evaluation of production systems - WGUS1065	S1	3	
	Sustainable design and innovation management - WGUS3012	S2	3	
	Industrial Economics for Sustainable industrial Engineering - WGMS7028	S2	3	
	Discrete event simulation and optimization - WGUS8042	S2	6	
	Research Project - 4GUC00E5	S2	3	
	Data analytics for industrial engineering - WGUS2092	S1	3	
SC	Quality and process development - WGUS2054	S1	3	
	Production and operations management - WGUS1044,	S2	3	
	Project on Data Analytics for Manufacturing - WGUS3022	S2	3	
I&E	Sustainable work and organization - WGUS2082	S1	3	
	French and Intercultural communication (S7) – (WGMS7011 and WGMS7021)	S1	3	
	Product Development Project 1 - 4GMP1611	S1	3	
	Product Development Project 2 - 4GUP1901	S2	6	
	Inventive problem solving, bio inspired innovation - WGUS2071	S2	3	





## 2<sup>nd</sup> year Aalto

Note: The course list below belongs to Curriculum 2022-2024. Aalto curriculum is renewed biannually. The new curriculum will be published in April 2024 at <https://www.aalto.fi/en/programmes/masters-programme-in-manufacturing/curriculum-2024-2026>. Minor changes are likely to occur.

Local up-to-date webpages for entry/exit university courses:

[Zero Defect Manufacture for a Circular Economy \(EIT\), Master of Science \(Technology\) | Aalto University](#)

- Language course (mandatory degree requirement at Aalto, e.g. LC-1310 Academic Communication for Msc students) on top of the 60 ECTS
- Summer school included in 2nd year I&E module

Type of modules	Aalto courses	ECTS	Semester	Total credits
TC	<a href="#">MEC-E7007 Factory Project (mandatory)</a>	5	1	5
	<i>Select 1 of the following:</i>		1	5
	<a href="#">ELEC-E8102 Distributed and Intelligent Automation Systems</a>	5	1	
	<a href="#">ELEC-E8714 Sustainable Electronics</a>	5	1	
	<a href="#">MEC-E1001 Mechanical Engineering in Society</a>	5	1	
	<a href="#">ELEC-E8103 Modelling, Estimation and Dynamic Systems</a>	5	1	
SC	<a href="#">MEC-E1090 Quality Management and Metrology (mandatory)</a>	5	1	5
Other	<a href="#">LC-XXXX Compulsory language course</a>	3	1	3
I&E	Centrally organized summer school	5	1*	5
	<a href="#">TU-E4100 Startup Experience</a>	9	1	9
	<a href="#">TU-C2080 Entrepreneurship Essentials</a>	1	1	3
MT	Master thesis	30	2	63

## Recap

Type of modules	ECTS in S1	ECTS in S2	ECTS in S3	ECTS in S4	Total credits
TC	15	15	10		40
SC	3	6	5		14
I&E	12	9	15		36



MT				30	30
Language			3		
Total	30	30	33	30	123



- Zero Defect for a Circular Economy

Study plan – UCD - Aalto collaboration

Entry university UCD – exit university Aalto

**1<sup>st</sup> year UCD**

Local up-to-date webpages for entry/exit university courses:

[ME Manufacturing Engineering w Zero Defect Man for a Circular Econ - Programme Details \(ucd.ie\)](http://ucd.ie)

Type of modules	UCD courses	ECTS	Semester	Total credits
TC	Eng. Decision Support Systems	5	2	
	Manufacturing Engineering II	5	1	
	Supply Chain Design & Analysis	5	1	
	Energy Systems and Climate Change	5	1	
	Advanced Polymer Engineering	5	2	
	Operations Management	5	2	
SC	Sys. Anal. & Improv. (EITM)	5	1	
	Data Analytics for Engineers	5	1	
I&E	CBE Business Plan	5	2	
	Technical Comms (Online) (option)	5	1	
	Innovation Leadership (option)	5	1	
	Research Skills and Techniques (option)	5	1	
	Professional Eng. (Finance) (core)	5	2	
	Professional Engineering (Management) (core)	5	2	



## 2<sup>nd</sup> year Aalto (academic year 2024-2025 or 2025-2026)

Note: The course list below belongs to Curriculum 2022-2024. Aalto curriculum is renewed biannually. The new curriculum will be published in April 2024 at <https://www.aalto.fi/en/programmes/masters-programme-in-manufacturing/curriculum-2024-2026>. Minor changes are likely to occur.

Type of modules	Aalto courses	ECTS	Semester	Total credits
TC	<i>Choose 10 ECTS of the following:</i>			10
	MEC-E1080 Production Engineering	5	3	
	MEC-E1090 Quality Management and Metrology	4	3	
	MEC-E1060 Machine Design	5	3	
	MEC-E1070 Selection of Engineering Materials	5		
SC	<a href="#">MEC-E1003 Machine Design Project</a>	5	3	5
I&E	Centrally organized Summer School	5	summer	5
	TU-E4100 Startup Experience	9	3	9
	<i>Choose 0-2 of the following to achieve total 30 ECTS for degree I&amp;E minor:</i>			
	TU-C2080 Entrepreneurship Essentials	1		1
	MNGT-C1005 Finland works	2		
Other	LC-XXXX Compulsory foreign language course	3	3	
MT	Master thesis	30	4	30

### Recap

Type of modules	ECTS in S1	ECTS in S2	ECTS in S3	ECTS in S4	Total credits
TC	15	15	10		<b>45</b>
SC	10	0	5		<b>15</b>
I&E	5	15	10+5		<b>30</b>
MT				30	
English			3		<b>3</b>
	30	30		63	<b>120+3</b>



## Zero Defect Manufacturing for Circular Economy Programme

### - Study plan – UCD - Grenoble

*Entry university UCD – exit university Grenoble INP*

#### **1<sup>st</sup> year - UCD**

Local up-to-date webpages for entry/exit university courses:

[ME Manufacturing Engineering w Zero Defect Man for a Circular Econ - Programme Details \(ucd.ie\)](http://ucd.ie)

Type of modules	UCD courses	ECTS	Semester	Total credits
TC	Eng. Decision Support Systems	5	2	
	Manufacturing Engineering II	5	1	
	Supply Chain Design & Analysis	5	1	
	Energy Systems and Climate Change	5	1	
	Advanced Polymer Engineering	5	2	
	Operations Management	5	2	
SC	Sys. Anal. & Improv. (EITM)	5	1	
	Data Analytics for Engineers	5	1	
I&E	CBE Business Plan	5	2	
	Technical Comms (Online) (option)	5	1	
	Innovation Leadership (option)	5	1	
	Research Skills and Techniques (option)	5	1	
	<u>Professional Eng. (Finance) (core)</u>	5	2	
	<u>Professional Engineering (Management) (core)</u>	5	2	



## 2<sup>nd</sup> year - Grenoble INP

Local up-to-date webpages for entry/exit university courses:

[Please click here to get more details](#)

Type of modules	Grenoble courses	ECTS	Semester	Total credits
TC (mandatory)	Multi-criteria Decision Aiding and Artificial Intelligence - 5GUC4202	5	S3	15
	Smart analytics for big data - 5GUC3500	5	S3	
	Virtual Reality for Industry 4.0 - 5GUC3319	5	S3	
SC (1 choice out of 2)	Circular Economy - 5GUC4302	6	S3	6
	Advanced Life Cycle Assessment - 5GUC4402	6	S3	
I&E (the first two mandatory)	Centrally organized summer school	5		10
	Operational excellence in R&D - 5GUC3700	5	S3	
	Innovation challenge	0	S3	
MT	Master thesis - WGUS4015	30	S4	30

## Recap

Type of modules	ECTS in S1	ECTS in S2	ECTS in S3	ECTS in S4	Total credits
TC	15	15	15		<b>45</b>
SC	10	0	6		<b>16</b>
I&E	5	15	10		<b>30</b>
MT				30	<b>30</b>
<b>Total</b>	<b>30</b>	<b>30</b>	<b>31</b>	<b>30</b>	<b>121</b>



## Zero Defect Manufacturing for Circular Economy Programme

### Study plan – UCD - Trento collaboration

*Entry university UCD – exit University of Trento*

#### 1<sup>st</sup> year UCD

*Local up-to-date webpages for entry/exit university courses:*

[ME Manufacturing Engineering w Zero Defect Man for a Circular Econ - Programme Details \(ucd.ie\)](http://ucd.ie)

#### Draft plan:

Type of modules	UCD courses	ECTS	Semester	Total credits
TC	Eng. Decision Support Systems	5	2	
	Manufacturing Engineering II	5	1	
	Supply Chain Design & Analysis	5	1	
	Energy Systems and Climate Change	5	1	
	Advanced Polymer Engineering	5	2	
	Operations Management	5	2	
SC	Sys. Anal. & Improv. (EITM)	5	1	
	Data Analytics for Engineers	5	1	
I&E	CBE Business Plan	5	2	
	Technical Comms (Online) (option)	5	1	
	Innovation Leadership (option)	5	1	
	Research Skills and Techniques (option)	5	1	
	<a href="#">Professional Eng. (Finance) (core)</a>	5	2	
	<a href="#">Professional Engineering (Management) (core)</a>	5	2	



## 2<sup>nd</sup> year Trento

Local up-to-date webpages for entry/exit university courses:

[MANAGEMENT AND INDUSTRIAL SYSTEMS ENGINEERING | Course Catalogue, Università degli studi di Trento \(cineca.it\)](#)

Type of modules	Trento courses	ECTS	Semester	Total credits
TC	<a href="#">Digital production and logistics systems</a>	9	1	9 ECTS
SC	<a href="#">Engineering system design</a>	6	1	6 ECTS
I&E	<a href="#">Organizations, human resources and innovation</a>	10	1	15 ECTS
	<a href="#">Summer school (centrally organized by EIT)</a>	5	1	
MT	<a href="#">Master thesis</a>	30	2	30 ECTS

### Recap

Type of modules	ECTS in S1	ECTS in S2	ECTS in S3	ECTS in S4	Total credits
TC	15	15	9		<b>39</b>
SC	10	0	6		<b>16</b>
I&E	5	15	10+5		<b>35</b>
MT				30	<b>30</b>





# Zero-Defect Manufacture for a Circular Economy programme

EIT Manufacturing

*Study plan Aalto - UNITN*

*Entry university UNITN – exit university Aalto*

## 1<sup>st</sup> year UNITN

*Local up-to-date webpages for entry/exit university courses:*

[MANAGEMENT AND INDUSTRIAL SYSTEMS ENGINEERING | Course Catalogue, Università degli studi di Trento \(cineca.it\)](#)

Type of modules	UNITN courses	ECTS	Semester	Total credits
TC	<a href="#">Advanced manufacturing and sustainable products</a>	12	1 and 2	36
	<a href="#">Dynamics in systems and networks</a>	12	2	
	<a href="#">Optimization models and algorithms</a>	6	1	
	Materials selection for engineering design	6	1	
	<i>Elective course</i>	6	1 or 2	
	<i>Elective course</i>	6	1 or 2	
I&E	Financial analysis and performance management	6	1	12
	<a href="#">Project management</a>	6	2	

Elective courses at 1<sup>st</sup> year:

Type of modules	UNITN courses	ECTS	Semester
SC	Design of precision systems	6	1
	<a href="#">Circular economy for materials processing</a>	6	2
	Sustainable materials management	6	2
	<a href="#">Recycling and sustainable materials</a>	6	2



## 2<sup>nd</sup> year Aalto (academic year 2024-2025 or 2025-2026)

Note: The course list below belongs to Curriculum 2022-2024. Aalto curriculum is renewed biannually. The new curriculum will be published in April 2024 at <https://www.aalto.fi/en/programmes/masters-programme-in-manufacturing/curriculum-2024-2026>. Minor changes are likely to occur.

Local up-to-date webpages for entry/exit university courses:

[Zero Defect Manufacture for a Circular Economy \(EIT\), Master of Science \(Technology\) | Aalto University](#)

Type of modules	Aalto courses	ECTS	Semester	Total credits
	<i>Elective courses (5 ECTS each)</i>		1	10
TC	<a href="#">MEC-E1080 Production Engineering</a>	5	1	
	<a href="#">MEC-E1003 Machine Design Project</a>	5	1	
	<a href="#">MEC-E1060 Machine Design</a>	5	1	
	<a href="#">MEC-E1070 Selection of Engineering Materials</a>	5	1	
SC	<a href="#">MEC-E1090 Quality Management and Metrology</a>	5	1	5
Other	LC-1310 Academic Communication or Msc students	3	1	3
I&E	<a href="#">TU-E4100 Startup Experience D</a>	9	1	14-16
	<a href="#">Summer school</a>	5	1	
	<i>Choose 0-2 of the following to achieve total 30 ECTS for degree I&amp;E minor</i>	2	1	
	<a href="#">TU-C2080 Entrepreneurship Essentials</a>			
	<a href="#">MNGT-C1005 Finland works</a>			
MT	<a href="#">Master thesis</a>	30	2	30

Type of modules	ECTS in S1	ECTS in S2	ECTS in S3	ECTS in S4	Total credits
TC	24	12	10		46
SC		12	5		17
I&E	6	6	16		28
			3		
MT	30	30	31+3	30	30



# Zero-Defect Manufacture for a Circular Economy programme

EIT Manufacturing

*Study plan*

Grenoble - UNITN

*Entry university UNITN – exit university Grenoble*

## **1<sup>st</sup> year UNITN**

*Local up-to-date webpages for entry/exit university courses:*

[MANAGEMENT AND INDUSTRIAL SYSTEMS ENGINEERING | Course Catalogue, Università degli studi di Trento \(cineca.it\)](#)

Type of modules	UNITN courses	ECTS	Semester	Total credits
	<a href="#">Advanced manufacturing and sustainable products</a>	12	1 and 2	
	<a href="#">Dynamics in systems and networks</a>	12	2	
	<a href="#">Optimization models and algorithms</a>	6	1	
	Materials selection for engineering design	6	1	
	<i>Elective course (see SC table below)</i>	6	1 or 2	
I&E	Financial analysis and performance management	6	1	18
	<a href="#">Project management</a>	6	2	
	<i>Elective course (see I&amp;E table below)</i>	6	2	

\* attendance to an Italian Language course (Level A1 CEFR ) on top to the mandatory 120 ECTS


 Elective courses at 1<sup>st</sup> year:

Type of modules	UNITN courses	ECTS	Semester
SC	Sustainable materials management	6	2
	Design of precision systems	6	1

Type of modules	UNITN courses	ECTS	Semester
I&E	<a href="#">Circular economy for materials processing</a>	6	2
	<a href="#">Recycling and sustainable materials</a>	6	2

**2<sup>nd</sup> year Grenoble**

Local up-to-date webpages for entry/exit university courses:

[Please click here to get more details](#)

Type of module	Grenoble courses (M2)	ECTS	Semester	Total credits
SC	Circular EconomiX - 5GUC4302	5	S3	10
	Advanced Life Cycle Assessment - 5GUC4402	5	S3	
TC	Multi-criteria Decision Aiding and Artificial Intelligence - 5GUC4202	5	S3	10 (2 courses among 3)
	Smart Analytics for Big Data - 5GUC3500	5	S3	
	Virtual Reality for Industry 4.0 - 5GUC3319	5	S3	
IE	Centrally organized summer school	5	S3	10
	Operational Excellence in R&D - 5GUC3700 OR iDesigner : Tackling Complexity by Integration - 5GUC0904	5	S3	
MT	Master thesis - WGUS4015	30	S4	30

