



MASTER COURSE IN MECHATRONICS ENGINEERING (LM 33) - A.A. 2025/26

A3 Curriculum Intelligent vehicles

FIRST YEAR												
FIRST SEMESTER												
Esse3 code	N°	Courses	SSD	SSD 2024	CFU	B	C	D	E	F	Duration (hours)	Notes
146032	1	Digital signal processing for mechatronics	ING-INF/07	IMIS-01/B	6		6				60	
146031	2	Mechanical design for mechatronics	ING-IND/14	IIND-03/A	9	9					90	
146029	3a	Mechatronic systems simulation - Mod. 1 Computational methods	MAT/08	MATH-05/A	6		6				60	
146030	4a	Precision engineering - Mod. 1 Design of precision systems	ING-IND/12	IMIS-01/A	6	6					60	
		SAFETY COURSES										(1)
				Tot. 1° sem	27	15	12	0	0	0		
SECOND SEMESTER												
Esse3 code	N°	Courses	SSD	SSD 2024	CFU	B	C	D	E	F	Duration (hours)	Notes
146029	3b	Mechatronic systems simulation - Mod. 2 Modeling	ING-IND/13	IIND-02/A	9	9					90	
146030	4b	Precision engineering - Mod. 2 Digital manufacturing	ING-IND/16	IIND-04/A	6	6					60	
140500	5	Automatic control	ING-INF/04	IINF-04/A	9		9				90	
140417	6	Mechanical vibrations	ING-IND/13	IIND-02/A	6	6					60	
		Other activities			3					3		(2)
				Tot. 2° sem	33	21	9	0	0	3		
				Tot. 1st year	60	36	21	0	0	3		

PROFESSOR
Macii David
Rustighi Emiliano
Bertolazzi Enrico
Bosetti Paolo

PROFESSOR
Biral Francesco
Bosetti Paolo
Zaccarian Luca
Bortoluzzi Daniele

SECOND YEAR												
FIRST SEMESTER												
Esse3 code	N°	Courses	SSD	SSD 2024	CFU	B	C	D	E	F	Duration (hours)	Notes
146036	7	Distributed estimation for robots and vehicles	ING-INF/07	IMIS-01/B	6		6				60	6 cfu from AD 146033
146038	8	Intelligent vehicles and autonomous driving	ING-IND/13	IIND-02/A	6	6					60	
140502	9	Embedded systems	ING-INF/01	IINF-01/A	9		9				90	
	12a	Elective course			6			6				(3)
				Tot. 1° sem	27	6	15	6	0	0		
SECOND SEMESTER												
Esse3 code	N°	Courses	SSD	SSD 2024	CFU	B	C	D	E	F	Duration (hours)	Notes
146035	10	Dynamics of vehicles	ING-IND/13	IIND-02/A	6	6					60	
146039	11	Architectures of intelligent transportation systems	ING-IND/13	IIND-02/A	6	6					60	
	12b	Elective course			6			6				(3)
140458		Final project			15				15			
				Tot. 2° sem	33	12	0	6	15	0		
				Tot. 2nd year	60	18	15	12	15	0		

PROFESSOR
Fontanelli Daniele
Rosati Papini Gastone
Brunelli Davide

PROFESSOR
Biral Francesco
Rosati Papini Gastone

TOTAL CFU	120	54	36	12	15	3
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ELECTIVE COURSES												
Esse3 code	N°	Courses	SSD	SSD 2024	CFU	B	C	D	E	F	Duration (hours)	Notes
146399		Multi-agent system for smart machining	ING-IND/12	IMIS-01/A	6			6				annual (4)
FIRST SEMESTER												
Esse3 code	N°	Courses	SSD	SSD 2024	CFU	B	C	D	E	F	Duration (hours)	Notes
145783		Advanced Formula SAE	ING-IND/12	IMIS-01/A	6			6				
146015		Machine learning	ING-INF/05	IINF-05/A	6			6			48	offered by DISI
146196		Renewable energy conversion systems	ING-IND/13	IIND-02/A	6			6			60	
140470		Robotic perception and action	ING-IND/12	IMIS-01/A	6			6			60	6 cfu from AD 140506
145958		Network dynamics	ING-INF/04	IINF-04/A	6			6			60	offered by LM 31 - AD 146007 mod. 2
SECOND SEMESTER												
Esse3 code	N°	Courses	SSD	SSD 2024	CFU	B	C	D	E	F	Duration (hours)	Notes
140474		Computer vision	ING-INF/03	IINF-03/A	6			6			48	offered by DISI
145764		Deep learning	ING-INF/05	IINF-05/A	6			6			48	offered by DISI
145475		Design methods for industrial engineering	ING-IND/15	IIND-03/B	6			6			60	offered by LM 53
145782		Laboratory of Internet of Things	ING-INF/01	IINF-01/A	6			6			60	
140473		Quality and innovation engineering	ING-INF/07	IMIS-01/B	6			6			60	offered by LM 31
146360		Superconducting quantum nanosystems, circuits and devices	FIS/03	PHYS-03/A	6			6				offered by PHYSICS Dept.

PROFESSOR
Bosetti Paolo

PROFESSOR
Bosetti Paolo
Passerini Andrea
Moretti Giacomo
De Cecco Mariolino
Giordano Giulia

PROFESSOR
Conci Nicola
Ricci Elisa
Cristofolini Ilaria
Brunelli Davide
Petri Dario
Mantegazzini Federica

NOTES:

(1) = All students must fulfill **safety training requirements**:

- **General safety training**

- **Specific safety training - Medium Risk**

For any further informations: <https://www.unitn.it/en/study/register/documents-and-certificates/safety-training>

(2) = The curriculum is considered complete with a total of 3CFU - type F. The credits have to be obtained during the master with the following regulation: <https://www.dii.unitn.it/en/121/other-activities-type-f-credits>.

(3) = Different elective modules - not included in the Manifesto - have to be approved by the Teaching board of the Department.

(4) = The course will be offered with **split-classroom** approach. Course content is heavily oriented to practical activities; synchronous activities are limited to progress meetings and discussions with teachers. The course is offered in partnership with INSA Toulouse (FR): students will have to collaborate remotely in mixed teams.

Approved on 16/07/2025 by the Department's Board