

MASTER COURSE IN MECHATRONICS ENGINEERING (LM 33) - A.A. 2026/27

A1 Curriculum Mechanics

DEACTIVATED FROM 2026/27												
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					
146031	2	Mechanical design for mechatronics	ING-IND/14	IIND-03/A	9	9						
146029	3a	Mechatronic systems simulation - Mod. 1 Computational methods	MAT/08	MATH-05/A	6		6					
146030	4a	Precision engineering - Mod. 1 Design of precision systems	ING-IND/12	IMIS-01/A	6	6						
		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						
146030	4b	Precision engineering - Mod. 2 Digital manufacturing	ING-IND/16	IIND-04/A	6	6						
140500	5	Automatic control	ING-INF/04	IINF-04/A	9		9					
140417	6	Mechanical vibrations	ING-IND/13	IIND-02/A	6	6						
		Other activities			3					3		(2)
				Tot. 2° sem	33	21	9	0	0	3		
					Tot. 1st year	60	36	21	0	0	3	

SECOND YEAR												
FIRST SEMESTER												
Esse3 code	N°	Courses	SSD	SSD 2024	CFU	B	C	D	E	F	Duration (hours)	Notes
146033	7	Intelligent distributed systems	ING-INF/07	IMIS-01/B	9		9				80	
146034	8	Advanced mechanical systems	ING-IND/13	IIND-02/A	6	6					54	
140440	9	Industrial robotics	ING-IND/13	IIND-02/A	6	6					54	
	12a	Elective course			6			6				(3)
					Tot. 1° sem	27	12	9	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	
140431	11	Modeling and design with finite elements	ING-IND/14	IIND-03/A	6	6					54	
	12b	Elective course			6			6				(3)
140458		Final project			15				15			
					Tot. 2° sem	33	12	0	6	15	0	
					Tot. 2nd year	60	24	9	12	15	0	
					TOTAL CFU	120	60	30	12	15	3	

PROFESSOR
Fontanelli Daniele
Moretti Giacomo
Bortoluzzi Daniele

PROFESSOR
Biral Francesco
Benedetti Matteo

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				
140426		Functional and smart materials	ING-IND/22	IMAT-01/A	6			6			54	
146196		Renewable energy conversion systems	ING-IND/13	IIND-02/A	6			6				
SECOND SEMESTER												
Esse3 code	N°	Courses	SSD	SSD 2024	CFU	B	C	D	E	F	Duration (hours)	Notes
145475		Design methods for industrial engineering	ING-IND/15	IIND-03/B	6			6			54	offered by LM 53
145959		Introduction to robotics	ING-INF/04	IINF-04/A	6			6			48	offered by DISI
146197		Microelectronics devices, sensors and MEMS	ING-INF/01	IINF-01/A	6			6			50	
140473		Quality and innovation engineering	ING-INF/07	IMIS-01/B	6			6			50	offered by LM 31
146356		Renewable energv integration in smart grids	ING-IND/32	IIND-08/A	6			6			60	

PROFESSOR
Bosetti Paolo

PROFESSOR
Bosetti Paolo
Lutterotti Luca
Moretti Giacomo

PROFESSOR
Cristofolini Ilaria
Saveriano Matteo
Dalla Betta Gian-Franco
Petri Dario
Cecati Federico

NOTES: Courses with low student enrollment may be delivered using alternative teaching methods.

(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.

MASTER COURSE IN MECHATRONICS ENGINEERING (LM 33) - A.A. 2026/27

A2 Curriculum Electronics and robotics

DEACTIVATED FROM 2026/27

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					
146031	2	Mechanical design for mechatronics	ING-IND/14	IIND-03/A	9	9						
146029	3a	Mechatronic systems simulation - Mod. 1 Computational methods	MAT/08	MATH-05/A	6		6					
146030	4a	Precision engineering - Mod. 1 Design of precision systems	ING-IND/12	IMIS-01/A	6	6						
		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						
146030	4b	Precision engineering - Mod. 2 Digital manufacturing	ING-IND/16	IIND-04/A	6	6						
140500	5	Automatic control	ING-INF/04	IINF-04/A	9		9					
140417	6	Mechanical vibrations	ING-IND/13	IIND-02/A	6	6						
		Other activities			3					3		(2)
				Tot. 2° sem	33	21	9	0	0	3		
				Tot. 1st year	60	36	21	0	0	3		

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				54	6 cfu from AD 146033
140506	8	Robotic perception and action	ING-IND/12	IMIS-01/A	9	9					80	
140440	9	Industrial robotics	ING-IND/13	IIND-02/A	6	6					54	
146037	10	Embedded systems	ING-INF/01	IINF-01/A	6		6				54	6 CFU from AD146439 Mod.1
145781	11	Advanced optimization-based robot control	ING-INF/04	IINF-04/A	6		6				48	offered by DISI
				Tot. 1° sem	33	15	18	0	0	0		

SECOND SEMESTER

Esse3 code	N°	Courses	SSD	SSD 2024	CFU	B	C	D	E	F	Duration (hours)	Notes
	12a	Elective course			6			6				(3)
	12b	Elective course			6			6				(3)
140458		Final project			15				15			
				Tot. 2° sem	27	0	0	12	15	0		
				Tot. 2st year	60	15	18	12	15	0		

TOTAL CFU 120 51 39 12 15 3

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				

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
145782		Laboratory of Internet of Things	ING-INF/01	IINF-01/A	6			6			54	
146197		Microelectronics devices, sensors and MEMS	ING-INF/01	IINF-01/A	6			6			50	
140473		Quality and innovation engineering	ING-INF/07	IMIS-01/B	6			6			50	offered by LM 31
146360		Superconducting quantum nanosystems, circuits and devices	FIS/03	PHYS-03/A	6			6				offered by PHYSICS Dept.

PROFESSOR

Fontanelli Daniele
De Cecco Mariolino
Bortoluzzi Daniele
Rech Paolo
Del Prete Andrea

PROFESSOR

Bosetti Paolo

PROFESSOR

Bosetti Paolo

PROFESSOR

Conci Nicola
Macii David
Dalla Betta Gian-Franco
Petri Dario
Rastelli Gianluca

NOTES: Courses with low student enrollment may be delivered using alternative teaching methods.

(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 by the Department Board 18/02/2026

MASTER COURSE IN MECHATRONICS ENGINEERING (LM 33) - A.A. 2026/27

A3 Curriculum Intelligent vehicles

DEACTIVATED FROM 2026/27												
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						
146031	2	Mechanical design for mechatronics	ING-IND/14	IIND-03/A	9	9						
146029	3a	Mechatronic systems simulation - Mod. 1 Computational methods	MAT/08	MATH-05/A	6	6						
146030	4a	Precision engineering - Mod. 1 Design of precision systems	ING-IND/12	IMIS-01/A	6	6						
		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						
146030	4b	Precision engineering - Mod. 2 Digital manufacturing	ING-IND/16	IIND-04/A	6	6						
140500	5	Automatic control	ING-INF/04	IINF-04/A	9	9						
140417	6	Mechanical vibrations	ING-IND/13	IIND-02/A	6	6						
		Other activities			3					3		(2)
				Tot. 2° sem	33	21	9	0	0	3		
				Tot. 1st year	60	36	21	0	0	3		

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				54	6 cfu from AD 146033
146038	8	Intelligent vehicles and autonomous driving	ING-IND/13	IIND-02/A	6	6					48	
140502	9	Embedded systems	ING-INF/01	IINF-01/A	9		9				81	9 CFU from AD146439 Mod.1
	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					48	
	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	
					TOTAL CFU	120	54	36	12	15	3	

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			54	6 cfu from AD 140506
145958		Network dynamics	ING-INF/04	IINF-04/A	6			6			52	offered by LM 31 - CFU from 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			54	offered by LM 53
145782		Laboratory of Internet of Things	ING-INF/01	IINF-01/A	6			6			54	
140473		Quality and innovation engineering	ING-INF/07	IMIS-01/B	6			6			50	offered by LM 31
146360		Superconducting quantum nanosystems, circuits and devices	FIS/03	PHYS-03/A	6			6				offered by PHYSICS Dept.

NOTES: Courses with low student enrollment may be delivered using alternative teaching methods.

(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 by the Department Board 18/02/2026

MASTER COURSE IN MECHATRONICS ENGINEERING - A.A. 2026/27

A4 Curriculum AUSIR (SPECTRO)

SECOND YEAR												
FIRST SEMESTER												
Esse3 code	N°	Courses	SSD	SSD 2024	CFU	B	C	D	E	F	Duration (hours)	Notes
146042	7	Distributed robot perception	ING-INF/07	IMIS-01/B	6		6				54	6 cfu from AD 146033
145623	8	Innovation and entrepreneurship studies in ICT	ING-INF/05	IINF-05/A	6		6				48	offered by DISI
146038	9	Intelligent vehicles and autonomous driving	ING-IND/13	IIND-02/A	6	6					48	
146043	10	Robot planning and its applications	ING-INF/05	IINF-05/A	6			6			48	offered by DISI
	11b	Elective courses			6			6				(1)
		SAFETY COURSES										(2)
				Tot. 1° sem	30	6	12	12	0	0		
SECOND SEMESTER												
Esse3 code	N°	Courses	SSD	SSD 2024	CFU	B	C	D	E	F	Duration (hours)	Notes
146123		Final project			30				30			
				Tot. 2° sem	30	0	0	0	30	0		
				Tot. 2nd year	60	6	12	12	30	0		

TOTAL	60	6	12	12	30	0
--------------	-----------	----------	-----------	-----------	-----------	----------

ELECTIVE COURSES												
FIRST SEMESTER												
Esse3 code	N°	Courses	SSD	SSD 2024	CFU	B	C	D	E	F	Duration (hours)	Notes
145781		Advanced optimization-based robot control	ING-INF/04	IINF-04/A	6			6			48	offered by DISI
146037		Embedded systems	ING-INF/01	IINF-01/A	6			6			54	6 CFU from AD146439 Mod.1
140440		Industrial robotics	ING-IND/13	IIND-02/A	6			6			54	
146463		Project course										

NOTES: Courses with low student enrollment may be delivered using alternative teaching methods.

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

(2) = 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>

Approved by the Department Board 18/02/2026

PROFESSOR
Fontanelli Daniele
Marchese Maurizio
Rosati Papini Gastone
Palopoli Luigi

PROFESSOR
Del Prete Andrea
Rech Paolo
Bortoluzzi Daniele