



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)
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)
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)
146033	7	Intelligent distributed systems	ING-INF/07	IMIS-01/B	9		9				
146034	8	Advanced mechanical systems	ING-IND/13	IIND-02/A	6	6					
140440	9	Industrial robotics	ING-IND/13	IIND-02/A	6	6					
	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)
146035	10	Dynamics of vehicles	ING-IND/13	IIND-02/A	6	6					
140431	11	Modeling and design with finite elements	ING-IND/14	IIND-03/A	6	6					
	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

ELECTIVE COURSES											
Esse3 code	N°	Courses	SSD	SSD 2024	CFU	B	C	D	E	F	Duration (hours)
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)
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			
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)
145475		Design methods for industrial engineering	ING-IND/15	IIND-03/B	6			6			offered by LM 53
145959		Introduction to robotics	ING-INF/04	IINF-04/A	6			6			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			offered by LM 31
146356		Renewable energy integration in smart grids	ING-IND/32	IIND-08/A	6			6			

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.

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					6 cfu from AD 146033
140506	8	Robotic perception and action	ING-IND/12	IMIS-01/A	9	9						
140440	9	Industrial robotics	ING-IND/13	IIND-02/A	6	6						
146037	10	Embedded systems	ING-INF/01	IINF-01/A	6		6					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				
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				offered by LM 31
146360		Superconducting quantum nanosystems, circuits and devices	FIS/03	PHYS-03/A	6			6				offered by PHYSICS Dept.

NOTES:

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- **Specific safety training - Medium Risk**

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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)
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)
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)
146036	7	Distributed estimation for robots and vehicles	ING-INF/07	IMIS-01/B	6		6				6 cfu from AD 146033
146038	8	Intelligent vehicles and autonomous driving	ING-IND/13	IIND-02/A	6	6					
140502	9	Embedded systems	ING-INF/01	IINF-01/A	9		9				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)
146035	10	Dynamics of vehicles	ING-IND/13	IIND-02/A	6	6					
146039	11	Architectures of intelligent transportation systems	ING-IND/13	IIND-02/A	6	6					
	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)
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)
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			
140470		Robotic perception and action	ING-IND/12	IMIS-01/A	6			6			6 cfu from AD 140506
145958		Network dynamics	ING-INF/04	IINF-04/A	6			6			6 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)
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			offered by LM 53
145782		Laboratory of Internet of Things	ING-INF/01	IINF-01/A	6			6			
140473		Quality and innovation engineering	ING-INF/07	IMIS-01/B	6			6			offered by LM 31
146360		Superconducting quantum nanosystems, circuits and devices	FIS/03	PHYS-03/A	6			6			offered by PHYSICS Dept.

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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					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						
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				offered by DISI
146037		Embedded systems	ING-INF/01	IINF-01/A	6			6				6 CFU from AD146439 Mod.1
140440		Industrial robotics	ING-IND/13	IIND-02/A	6			6				
146463		Project course										

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Approved by the Department Board 18/03/2026