Semester 1 :

Teaching Unit TU	Semester hourly volume (15 weeks / Semester)					Coefficients	Crédits	Assessment Method	
	Lectures (H)	Tutorials (H)	Laboratory Work (H)	Total (H)	Personal work			Tutorial/Lab work	Final Exam
Core Teaching Unit (UEF)									
UEF1.1.1	**4H30**	**4H30**	**3H**	**12H**	**7H30**	**12**	**12**		
Introduction to System Dynamics and Control	1H30	1H30	1H	4H	2h30	4	4	(20% Tut + 20% Lab)	60%
Digital Signal Processing	1H30	1H30	1H	4H	2H30	4	4	(20% Tut + 20% Lab)	60%
Mathematics for Engineers	1H30	1H30	1H	4H	2H30	4	4	(20% Tut + 20% Lab)	60%
UEF1.1.2	**3H**	**3H**	**2H**	**8H**	**5H00**	**8**	**8**		
Advanced Analog Electronics	1H30	1H30	1H	4H	2H30	4	4	(20% Tut + 20% Lab)	60%
Introduction to Electrical Engineering	1H30	1H30	1H	4H	2H30	4	4	(20% Tut + 20% Lab)	60%
Methodology Teaching Unit (UEM)									
UEM1.1.1	**3H**	**0H**	**3H**	**6H**	**4H00**	**6**	**6**		
Computational Modeling & Simulation for Engineering Design	1H30	0H	1H30	3H	2h	3	3	40% Lab	60%
Advanced Technical Design	1H30	0H	1H30	3H	2h	3	3	40% Lab	60%
UEM1.1.2	**1H30**	0H	**1H**	**2H30**	**1H00**	**2**	**2**		
Sensors and Instrumentation	1H30	0H	1H	2H30	1H00	2	2	40% Lab	60%
Cross-disciplinary Teaching Unit (UET)									
UET1.1.1	**1H30**	**0H**	**0H**	**1H30**	**0H30**	**1**	**1**		
Introduction to Entrepreneurship	1H30	0H	0H	1H30	0H30	1	1		100%
Discovery Teaching Unit (UED)									
UED1.1.1	**1H30**	**0H**	**0H**	**1H30**	**0H30**	**1**	**1**		
Basic Principles of Robotics	1H30	0H	0H	1H30	0H30	1	1		100%
Total Semester S1	**15H00**	**06H00**	**10H30**	**31H30**	**18h30**	**30**	**30**		

Semester 2

Unité d'Enseignement UE	Semester hourly volume (15 weeks / Semester)					Coefficients	Crédits	Assessment Method	
	Lectures (H)	Tutorials (H)	Laboratory Work (H)	Total (H)	Personal work			Tutorial/Lab work	Final Exam
Core Teaching Unit (UEF)									
UEF1.2.1	**3H**	**3H**	**2H**	**8H30**	**4H30**	**8**	**8**		
Introduction to Machine Learning	1H30	1H30	1H	4H	2H30	4	4	(20% Tut + 20% Lab)	60%
Optimization Techniques	1H30	1H30	1H30	4H30	2H00	4	4	(20% Tut + 20% Lab)	60%
UEF1.2.2	**4H30**	**4H30**	**2H**	**11H**	**7H00**	**11**	**11**		
Microprocessors and Microcontrollers	1H30	1H30	1H	4H	2H30	4	4	(20% Tut + 20% Lab)	60%
Digital Control Systems	1H30	1H30	1H	4H	2H30	4	4	(20% Tut + 20% Lab)	60%
Mechanical Systems	1H30	1H30	0H	3H	2H00	3	3	40% Tut	60%
Methodology Teaching Unit (UEM)									
UEM1.2.1	**4H30**	**0H**	**3H30**	**8H**	**4H00**	**7**	**7**		
Computer Aided Design (CAD)	1H30	0H	1H30	3H	2H00	3	3	40% Lab	60%
Engineering programming	1H30	0H	1H	2H30	1H00	2	2	40% Lab	60%
Electric Actuators for Robotics	1H30	0H	1H	2H30	1H00	2	2	40% Lab	60%
Cross-disciplinary Teaching Unit (UET)									
UET1.2.1	**1H**	**0H**	**1H30**	**2H30**	**1H00**	**2**	**2**		
Introduction to UAVs Operations and Regulations	1H	0H	0H	1H	0H30	1	1		100%
Capstone Project I	0H	0H	1H30	1H30	0H30	1	1	100%	
Discovery Teaching Unit (UED)									
UED1.2.1	**0H**	**0H**	**1H30**	**1H30**	**2H00**	**2**	**2**		
Linux Operating System	0H	0H	1H30	1H30	0h30	1	1	100% Lab	
Training Internship I	/	/	/	/	1H30	1	1	100%	
Total Semestre S2	**13H00**	**07H30**	**10H30**	**31H30**	**18H30**	**30**	**30**		

Semester 3

Unité d'Enseignement UE	Semester hourly volume (15 weeks / Semester)					Coefficients	Crédits	Assessment Method	
	Lectures (H)	Tutorials (H)	Laboratory Work (H)	Total (H)	Personal work			Tutorial/Lab work	Final Exam
Core Teaching Unit (UEF)									
UEF2.1.1	**3H**	**3H**	**2H**	**8H**	**5H**	**8**	**8**		
Nonlinear and optimal control design	1H30	1H30	1H	4H	2H30	4	4	(20% Tut + 20% Lab)	60%
Multi-Physics Modeling of Technological Systems	1H30	1H30	1H	4H	2H30	4	4	(20% Tut + 20% Lab)	60%
UEF2.1.2	**4H30**	**4H30**	**2H**	**11H**	**8H00**	**12**	**12**		
Robot Motion Planning	1H30	1H30	1H	4H	2H30	4	4	(20% Tut + 20% Lab)	60%
Kinematics, Dynamics and Control of Robot Manipulators	1H30	1H30	0H	3H	3H00	4	4	40% Tut	60%
Power Electronics	1H30	1H30	1H	4H	2H30	4	4	(20% Tut + 20% Lab)	60%
Methodology Teaching Unit (UEM)									
UEM2.1.1	**4H30**	**0H**	**3H30**	**8H**	**4H00**	**7**	**7**		
Mobile Robotics	1H30	0H	1H	2H30	2H30	3	3	40% Lab	60%
Advanced and Current Trends in Artificial Intelligence,	1H30	0H	1H	2H30	1H	2	2	40% Lab	60%
Robot Operating System & Computer Tools for Robotics	1H30	0H	1H30	3H	0H30	2	2	40% Lab	60%
Cross-disciplinary Teaching Unit (UET)									
UET2.1.1	**1H30**	**0H**	**0H**	**1H30**	**0H30**	**1**	**1**		
Marketing and Economy	1H30	0H	0H	1H30	0H30	1	1		100%
Discovery Teaching Unit (UED)									
UED2.1.1	**1H**	**0H**	**1H30**	**2H30**	**1H00**	**2**	**2**		
Sensors for Autonomous Systems	1H	0H	0H	1H	0H30	1	1		100%
Capstone Project II	0H	0H	1H30	1H30	0H30	1	1	100% Lab	
Total Semestre S3	**14H30**	**07H30**	**09H00**	**31H00**	**18h30**	**30**	**30**		

Semester 4

Unité d'Enseignement UE	Semester hourly volume (15 weeks / Semester)					Coefficients	Crédits	Assessment Method	
	Lectures (H)	Tutorials (H)	Laboratory Work (H)	Total (H)	Personal Work			Tutorial/Lab work	Final Exam
Core Teaching Unit (UEF)									
UEF2.2.1	**4H30**	**1H30**	**3H30**	**9H30**	**6H**	**10**	**10**		
Industrial Automation	1H30	1H30	1H	4H	2H30	4	4	(20% Tut + 20% Lab)	60%
Industrial Robots Control	1H30	0H	1H	2H30	1H	2	2	40% Lab	60%
Internet Of Things (IOT)	1H30	0H	1H30	3H	2H30	4	4	40% Lab	60%
UEF2.2.2	**3H**	**1H30**	**3H**	**7H30**	**5H**	**8**	**8**		
UAV Flight Testing & Operations	1H30	1H30	1H30	4H30	2H	4	4	(20% Tut + 20% Lab)	60%
Introduction to Materials & Mechanical Manufacturing Processes	1H30	0H	1H30	3H	3H	4	4	40% Lab	60%
Methodology Teaching Unit (UEM)									
UEM2.2.1	**3H**	**1H30**	**1H**	**5H30**	**3H**	**5**	**5**		
Advanced Embeded Systems	1H30	0H	1H	2H30	1H	2	2	40% Lab	60%
Machine Dynamics	1H30	1H30	0H	3H	2H	3	3	40% Tut	60%
UEM2.2.2	**1H30**	**0H**	**1H30**	**3H**	**2H**	**3**	**3**		
Computational intelligence for Optimization	1H30	0H	1H30	3	2H	3	3	40% Lab	60%
Cross-disciplinary Teaching Unit (UET)									
UET2.2.1	**1H30**	**0H**	**0H**	**1H30**	**0H30**	**1**	**1**		
Project management	1H30	0H	0H	1H30	0H30	1	1		100%
Discovery Teaching Unit (UED)									
UED2.2.1	**3H**	**0H**	**0H**	**3H**	**2H30**	**3**	**3**		
Reverse Engineering and Rapid Prototyping	1H30	0H	0H	1H30	0H30	1	1		100%
Introduction to Industry 4.0 and Smart Manufacturing	1H30	0H	0H	1H30	0H30	1	1		100%
Training Internship II	/	/	/	/	1H30	1	1	100%	
Total Semestre S4	**16H30**	**04H30**	**09H00**	**30H00**	**19H00**	**30**	**30**		

Semester 5

Unité d'Enseignement UE	Volume horaire semestriel (15 semaines / semestre)					Coefficients	Crédits	Assessment Method	
	Lectures (H)	Tutorials (H)	Laboratory Work (H)	Total (H)	Personal work			Tutorial/Lab work	Final Exam
Core Teaching Unit (UEF)									
UEF3.1.1	**3H**	**3H**	**2H**	**8H**	**5**	**8**	**8**		
Advanced Machine Learning for Robotics	1H30	1H30	1H	4H	2H30	4	4	(20% Tut + 20% Lab)	60%
Distributed Systems and Agent-Based Technologies	1H30	1H30	1H	4H	2H30	4	4	(20% Tut + 20% Lab)	60%
UEF3.1.2	**4H30**	**1H30**	**3H30**	**9H30**	**6H30**	**10**	**10**		
Human-machine, machine-machine Interaction/Collaboration	1H30	0H	1H	2H30	2H30	3	3	40% Lab	60%
Computer vision for robotics	1H30	1H30	1H	4H	2h30	4	4	(20% Tut + 20% Lab)	60%
Real-Time Operating Systems	1H30	0H	1H30	3H	1H30	3	3	40% Lab	60%
Methodology Teaching Unit (UEM)									
UEM3.1.1	**3H**	**1H30**	**2H**	**6H30**	**5**	**7**	**7**		
Marine Robotics	1H30	1H30	1H	4H	2H30	4	4	(20% Tut + 20% Lab)	60%
Data fusion	1H30	0H	1H	2H30	2H30	3	3	40% Lab	60%
Cross-disciplinary Teaching Unit (UET)									
UET3.1.1	**3H**	**0H**	**0H**	**3H**	**1H**	**2**	**2**		
Entrepreneurship & Startup Development	1H30	0H	0H	1H30	0H30	1	1		100%
Quality Control	1H30	0H	0H	1H30	0H30	1	1		100%
Discovery Teaching Unit (UED)									
UED3.1.1	**3H**	**0H**	**0H**	**3H**	**2H30**	**3**	**3**		
Service Robotics	1H30	0H	0H	1H30	0H30	1	1		100%
Cybersecurity	1H30	0H	0H	1H30	0H30	1	1		100%
Training Internship III	/	/	/	/	1H30	1	1	100%	
Total Semestre S5	**16H30**	**08H30**	**12H00**	**30H00**	**20H00**	**30**	**30**		

Semester 6

Internships in companies or research laboratories culminating in a thesis and an oral defense.

		Semester Hourly Volume	Coefficients
Internship and Final Year Project	14 Weeks	420 hours	30
Total	14 Weeks	420 hours	30

Detailed Syllabus by Subject

Detailed program by course subject

Semester 1

Course Subject: Introduction to System Dynamics and Control, **Code:** ISDC
Course Subject: Digital Signal Processing, **Code:** DSP
Course Subject: Mathematics for Engineers, **Code:** MAE
Course Subject: Advanced Analog Electronics, **Code:** AAE
Course Subject: Introduction to Electrical Engineering, **Code:** IEE
Course Subject: Computational Modeling & Simulation for Engineering Design, **Code:** CMSED
Course Subject: Advanced Technical Design, **Code:** ATD
Course Subject: Sensors and Instrumentation, **Code:** SNI
Course Subject: Introduction to Entrepreneurship, **Code:** INE
Course Subject: Basic Principles of Robotics, **Code:** BPR

Semester 2

Course Subject: Introduction to Machine Learning, **Code:** IML
Course Subject: Optimization Techniques, **Code:** OPT
Course Subject: Microprocessors and microcontrollers, **Code:** MPMC
Course Subject: Digital Control Systems, **Code:** DCS
Course Subject: Mechanical systems, **Code:** IMS
Course Subject: Computer Aided Design, **Code:** CAD
Course Subject: Engineering Programming, **Code:** ENGP
Course Subject: Electric Actuators for Robotics, **Code:** EAR
Course Subject: Introduction to UAVs Operations and Regulations , **Code:** UAVOR
Course Subject: Capstone Project I, **Code:** CAP-I
Course Subject: Linux Operating System, **Code:** LOS
Course Subject: Training Internship I, **Code:** TI-I

Semester 3

Course Subject: Nonlinear and Optimal Control Design, **Code:** NLOCD
Course Subject: Multi-Physics Modeling of Technological Systems, **Code:** MPMTS
Course Subject: Robot Motion Planning, **Code:** RMP
Course Subject: Kinematics, Dynamics and Control of Robot Manipulators, **Code:** KDCRM
Course Subject: Power Electronics, **Code:** POWE
Course Subject: Mobile Robotics, **Code:** MOR
Course Subject: Advanced and Current Trends in Artificial Intelligence, **Code:** ACTAI
Course Subject: Robot Operating System & Computer Tools for Robotics, **Code:** ROS-CTR
Course Subject: Marketing and Economy, **Code:** MARE
Course Subject: Sensors for Autonomous Systems, **Code:** SNAS
Course Subject: Capstone Project II, **Code:** CAP-II

Semester 4

Course Subject: Industrial Automation, **Code:** IAUT
Course Subject: Industrial Robots Control, **Code:** IRC
Course Subject: Internet Of Things (IOT), **Code:** IOT
Course Subject: UAV Flight Testing & Operations, **Code:** UAVFTO
Course Subject: Introduction to Materials & Mechanical Manufacturing Processes, **Code:** IMMMP
Course Subject: Advanced Embeded Systems **Code:** AES
Course Subject: Machine Dynamics, **Code:** MADY
Course Subject: Computational intelligence for Optimization, **Code:** CIO
Course Subject: Project management, **Code:** PROM
Course Subject: Reverse Engineering and Rapid Prototyping, **Code:** RERP
Course Subject: Introduction to Industry 4.0 and Smart Manufacturing, **Code:** IISM
Course Subject: Training Internship II, **Code:** TI-II

Semester 5

Course Subject: Advanced Machine Learning for Robotics, **Code:** AMLR
Course Subject: Distributed Systems and Agent-Based Technologies, **Code:** DSABT
Course Subject: Human-Machine, Machine-Machine Interaction/Collaboration, **Code:** MMI
Course Subject: Computer Vision for Robotics, **Code:** CVR
Course Subject: Real-Time Operating Systems, **Code:** RTOS
Course Subject: Marine Robotics, **Code:** MROB
Course Subject: Data fusion, **Code:** DFU
Course Subject: Entrepreneurship & Startup Development, **Code:** ESTART
Course Subject: Quality Control, **Code:** QCN
Course Subject: Service robotics, **Code:** SROB
Course Subject: Cybersecurity, **Code:** CYBER
Course Subject: Training Internship III, **Code:** TI-III