Semester 5 :

Unité d'Enseignement UE	Volume horaire semestriel (15 semaines / semestre)					Coefficients	Credits
	Cours (h)	Travaux dirigés (h)	Travaux pratiques(h)	Travail Personnel (h)	Total (h)		
Unité d'Enseignement Fondamentale							
UEF1.1.1	**4**	**3**	**2**	**2**	**11**	**8**	**8**
Linear Control Systems	2	1.5	1	1	5.5	4	4
Embedded Systems Design	2	1.5	1	1	5.5	4	4
UEF1.1.2	**6**	**4.5**	**3**	**3**	**16.5**	**12**	**12**
Advanced Electronics	2	1.5	1	1	5.5	4	4
Instrumentation and Sensors	2	1.5	1	1	5.5	4	4
Digital Signal Processing	2	1.5	1	1	5.5	4	4
Unité d'Enseignement Méthodologie							
UEM1.1.1	**3**	**1**	**3**	**2**	**9**	**6**	**6**
Introduction to Linux	1	0	2	1	4	3	3
Optimization Techniques	2	1	1	1	5	3	3
Unité d'Enseignement Transversale							
UET1.1.1	**1**	**0**	**0**	**1**	**2**	**2**	**2**
Ethics and Safety in AI and Robotics	1	0	0	1	2	2	2
Unité d'Enseignement Découverte							
UED1.1.1	**1.5**	**0**	**0**	**1**	**2.5**	**2**	**2**
Principles of Flight and Aeronautics	1.5	0	0	1	2.5	2	2
Total Semestre S1	**15. 5**	**8.5**	**8**	**9**	**41**	**30**	**30**

Semester 6 :

Unité d'Enseignement UE	Volume horaire semestriel (15 semaines / semestre)					Coefficients	Credits
	Cours (h)	Travaux dirigés (h)	Travaux pratiques(h)	Travail Personnel (h)	Total (h)		
Unité d'Enseignement Fondamentale							
UEF1.2.1	**4**	**2.5**	**2**	**2**	**10.5**	**7**	**7**
State Space Analysis and Control Design	2	1	1	1	5	4	4
Kinematics and Dynamics of Unmanned Systems	2	1.5	1	1	5.5	3	3
UEF1.2.2	**4**	**3**	**2**	**2**	**11**	**6**	**6**
Modeling and Control of Robotic Manipulators	2	1.5	1	1	5.5	3	3
Actuators	2	1.5	1	1	5.5	3	3
Unité d'Enseignement Méthodologie							
UEM1.2.1	**2**	**1**	**3**	**2**	**8**	**6**	**6**
Communication Systems	1	1	1	1	4	3	3
Real Time Operating Systems	1	0	2	1	4	3	3
UEM1.2.2	**2.5**	**1**	**3**	**2**	**8.5**	**6**	**6**
Power Electronics	1.5	1	1	1	4.5	3	3
Introduction to Machine Learning	1	0	2	1	4	3	3
Unité d'Enseignement Transversale							
UET1.2.1	**1**	**0**	**0**	**1**	**2**	**2**	**2**
Regulations and Standards for Unmanned Systems	1	0	0	1	2	2	2
Unité d'Enseignement Découverte							
UED1.2.1	**0**	**0**	**1**	**3**	**4**	**3**	**3**
Capstone Project I	**0**	**0**	**1**	1	2	2	2
Training Internship I	**/**	**/**	**/**	2	2	1	1
Total Semestre S2	**13.5**	**7.5**	**11**	**12**	**44**	**30**	**30**

Semester 7:

Unité d'Enseignement UE	Volume horaire semestriel (15 semaines / semestre)					Coefficients	Credits
	Cours (h)	Travaux dirigés (h)	Travaux pratiques(h)	Travail Personnel (h)	Total (h)		
Unité d'Enseignement Fondamentale							
UEF2.1.1	**5**	**2**	**3.5**	**3**	**13.5**	**9**	**9**
Multivariable Control Systems Design	2	1	1	1	5	3	3
Computer Vision	2	0	1.5	1	4.5	3	3
System Identification	1	1	1	1	4	3	3
UEF2.1.2	**5.5**	**2**	**3.5**	**3**	**14**	**9**	**9**
Fundamentals of Autonomous Navigation	2	1	1	1	5	3	3
Filtering and Recursive Estimation	2	1	1	1	5	3	3
Advanced Embedded Systems Design	1.5	0	1.5	1	4	3	3
Unité d'Enseignement Méthodologie							
UEM2.1.1	**1**	**0**	**2**	**1**	**4**	**3**	**3**
Neural Networks and Deep Learning	1	0	2	1	4	3	3
Unité d'Enseignement Transversale							
UET2.1.1	**1.5**	**1**	**3**	**2**	**7.5**	**5**	**5**
Antennas and Propagation	1.5	1	1	1	4.5	3	3
Mechanical CAD for Robotics	0	0	2	1	3	2	2
Unité d'Enseignement Découverte							
UED2.1.1	**1**	**0**	**1**	**2**	**4**	**4**	**4**
Project Management for Engineers	1	0	0	1	2	2	2
Capstone Project II	0	0	1	1	2	2	2
Total Semestre S3	**14**	**5**	**13**	**11**	**43**	**30**	**30**

Semester 8:

Unité d'Enseignement UE	Volume horaire semestriel (15 semaines / semestre)					Coefficients	Credits
	Cours (h)	Travaux dirigés (h)	Travaux pratiques(h)	Travail Personnel (h)	Total (h)		
Unité d'Enseignement Fondamentale							
UEF2.2.1	**4**	**2**	**2**	**2**	**10**	**6**	**6**
Non Linear Control Systems	2	1	1	1	5	3	3
Optimal Control	2	1	1	1	5	3	3
UEF2.2.2	**5.5**	**2.5**	**4**	**3**	**15**	**9**	**9**
Advanced AI Techniques	1.5	0	2	1	4.5	3	3
Advanced Navigation Systems	2	1.5	1	1	5.5	3	3
Aerodynamics and Hydrodynamics	2	1	1	1	5	3	3
Unité d'Enseignement Méthodologie							
UEM2.2.1	**4**	**1**	**3**	**3**	**11**	**9**	**9**
Human-robot Interaction	1	1	1	1	4	3	3
UAV Flight Testing and Operations	0	0	2	1	3	3	3
Propulsion Systems	3	0	0	1	4	3	3
Unité d'Enseignement Transversale							
UET2.2.1	**1**	**0**	**1**	**1**	**3**	**3**	**3**
Cybersecurity for Unmanned Systems	1	0	1	1	3	3	3
Unité d'Enseignement Découverte							
UED2.2.1	**1.5**	**0**	**2**	**5**	**8.5**	**3**	**3**
Reverse Engineering and Rapid Prototyping	1.5	0	0	1	2.5	1	1
Capstone Project III	0	0	2	2	4	1	1
Training Internship II	/	/	/	2	2	1	1
Total Semestre S4	**16**	**5.5**	**12**	**14**	**47.5**	**30**	**30**

Semester 9:

Unité d'Enseignement UE	Volume horaire semestriel (15 semaines / semestre)					Coefficients	Credits
	Cours (h)	Travaux dirigés (h)	Travaux pratiques(h)	Travail Personnel (h)	Total (h)		
Unité d'Enseignement Fondamentale							
UEF3.1.1	**4**	**1**	**2**	**2**	**9**	**8**	**8**
Advanced UAS Programming	1	1	2	1	5	4	4
Fundamentals of Aerospace Engineering	3	0	0	1	4	4	4
UEF3.1.2	**3.5**	**3**	**2.5**	**2**	**11**	**6**	**6**
Electric Vehicles and Energy Systems	2	1.5	1	1	5.5	3	3
Reinforcement Learning	1.5	1.5	1.5	1	5.5	3	3
Unité d'Enseignement Méthodologie							
UEM3.1.1	**4**	**1**	**1**	**2**	**8**	**6**	**6**
Swarm Robotics and Multi-Agent Systems	1	1	1	1	4	3	3
Unmanned Systems Practical Cases	3	0	0	1	4	3	3
Unité d'Enseignement Transversale							
UET3.1.1	**2**	**0**	**2**	**2**	**6**	**6**	**6**
Biomimetisme and Bio-inspired Robotics	1	0	1	1	3	3	3
Industrial Automation	1	0	1	1	3	3	3
Unité d'Enseignement Découverte							
UED3.1.1	**2**	**0**	**4**	**5**	**11**	**4**	**4**
Training Internship III	**0**	**0**	**0**	2	2	1	1
Capstone Project IV	1	0	4	2	7	2	2
Academic Communication and Research	1	0	0	1	2	1	1
Total Semestre S5	**15.5**	**5**	**11.5**	**13**	**45**	**30**	**30**

Semester 10:

Students complete internships in companies or research laboratories, which conclude with the submission of 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

Course List

Semester 5

Matière: Linear Control Systems **Code:** LCS
Matière: Embedded Systems Design **Code:** ESD
Matière: Advanced Electronics **Code:** ADE
Matière: Instrumentation and Sensors **Code:** INS
Matière: Digital Signal Processing **Code:** DSP
Matière: Introduction to Linux **Code:** ILI
Matière: Optimization Techniques **Code:** OPT
Matière: Ethics and Safety in AI and Robotics **Code:** ESAIR
Matière: Principles of Flight and Aeronautics **Code:** PFA

Semester 6

Matière: State Space Analysis and Control Design **Code:** SSACD
Matière: Kinematics and Dynamics of Unmanned Systems **Code:** KDUS
Matière: Modeling and Control of Robotic Manipulators **Code:** MCRM
Matière: Actuators **Code:** ACT
Matière: Communication Systems **Code:** CSY
Matière: Real Time Operating Systems **Code:** RTOS
Matière: Power Electronics **Code:** POE
Matière: Introduction to Machine Learning **Code:** IML
Matière: Regulations and Standards for Unmanned Systems **Code:** RSUS
Matière: Capstone Project I **Code:** CP-I
Matière: Training Internship I **Code:** TI-I

Semester 7

Matière: Multivariable Control Systems Design **Code:** MCSD
Matière: Computer Vision **Code:** CV
Matière: System Identification **Code:** PID
Matière: Fundamentals of Autonomous Navigation **Code:** FAN
Matière: Filtering and Recursive Estimation **Code:** FRE
Matière: Advanced Embedded Systems Design **Code:** AESD
Matière: Neural networks and Deep Learning **Code:** NNDL
Matière: Antennas and Propagation **Code:** APR
Matière: Mechanical CAD for Robotics **Code:** MCR
Matière: Project Management for Engineers **Code:** PME
Matière: Capstone Project II **Code:** CP_II

Semester 8

Matière: Nonlinear Control Systems **Code:** NCS
Matière: Optimal Control **Code:** OC
Matière: Advanced AI techniques **Code:** AAT
Matière: Advanced Navigation Systems **Code:** ANS
Matière: Aerodynamics and Hydrodynamics **Code:** AH
Matière: Human-robot interaction **Code:** HRI
Matière: UAV Flight Testing and Operations **Code:** UFTO

Matière: Cybersecurity for Unmanned Systems **Code:** CUS
Matière: Reverse Engineering and Rapid Prototyping **Code:** REPP
Matière: Capstone Project III **Code:** CP-III
Matière: Training Internship II **Code:** TI_II

Semester 9

Matière: Advanced UAS Programming **Code:** AUP
Matière: Fundamentals of Aerospace Engineering **Code:** FAE
Matière: Electric Vehicles and Energy Systems **Code:** EVES
Matière: Reinforcement Learning **Code:** REL
Matière: Swarm Robotics and Multi-Agent Systems **Code:** SRMAS
Matière: Unmanned Systems Practical Cases **Code:** USPC
Matière: Humanoid and Bio-inspired Robotics **Code:** HBIR
Matière: Industrial Automation **Code:** INA
Matière: Training Internship III **Code:** TI-III
Matière: Capstone Project IV **Code:** CP-IV
Matière: Academic Communication and Research **Code:** ACR