









1st year - IA2R Engineering Degree											
Nature	Description	Resp	Hrs Etu	HCM	HTD	HTP	Conf	TA	Coef	ECTS	
SEM	S5 SEMESTER - IA2R										
UE	Math tools & Sciences for engineers	F. Collin							6	6	
EC	Advanced maths for engineering science 	K. Coulibaly	36	16	20				2		
EC	Languages of scientific programming	F. Collin	24		24				2		
EC	Electrical energy	S. Germain	28	6	10	12			2		
UE	Control engineering & Robotics	H. Garnier							7	7	
EC	Feedback control 	H. Garnier/F. Collin	36	12	12	12			3		
EC	Robotics	P. Dugrain/H. Garnier	24	4		20			2		
EC	Design & manufacture of mobile robots	E. Jacquot/C. Lenic	36	4		32			2		
UE	Computer science & IT networks	V. Despré							7	7	
EC	Databases	V. Despré	18	6	12				1,5		
EC	Advanced databases	V. Despré	18	6	12				1,5		
EC	Programmation orientée objet	V. Despré	36	12	24				2		
EC	Languages for system programming	C. Lenic	36	6	18	12			2		
UE	Humanities & Social Sciences - Language	M. Michel							6	6	
EC	Entrepreneurship and communication	M. Michel	18	6	12				2		
EC	Introduction to research and innovation 	G. Millérioux	14	10	4			8	2		
EC	English 	D. Brown	28		28			10	2		
EC	2nd language (optional)				20				1*		
UE	Project	S. Germain/D. Savoy							4	4	
EC	Project	S. Germain	42	12	30			30	4		
EC	Global responsibility	C. Duez									
	Course evaluation of the semester	H. Garnier	2								
	Total in hours for Semester 5		396	100	206	88	0	48		30	

Nature	Description			HCM	HTD	HTP	Conf	TA	Coef	ECTS	
SEM	S6 SEMESTER - IA2R										
UE	Math tools & Sciences for engineers	C. Bouby							7	7	
EC	Numerical analysis	C. Bouby	36	18	18				3		
EC	Statistics	M. C. Suhner	36	16	20				2		
EC	Applied electrical energy	G. Didier	32		8	24			2		
UE	Control engineering & Robotics	H. Garnier							6	6	
EC	Digital control 	H. Garnier/G. Millérioux	36	14	14	8			3		
EC	Sequential systems	J.M. Rivière	36	10	10	16			3		
UE	Computer science & IT networks	M. Gilson							6	6	
EC	IT network programming 	V. Despré	36	12	24				3		
EC	Protocols and infrastructures of the internet	M. Gilson	36	16	20				3		
UE	Humanities & Social Sciences - Languages	M. Michel							5	5	
EC	Compagny law	M. Michel	18	18					2		
EC	Sciences - Technologies - Society	M. Schiavon	16	8	8				1		
EC	English 	D. Brown	28		28			10	2		
EC	2nd language (optional)				20				1*		
UE	Project	S. Germain							6	6	
EC	Project	S. Germain	96		96			48	6		
EC	Global responsibility	C. Duez									
	Course evaluation of the semester	H. Garnier	2								
	Total in hours for Semester 6		408	112	246	48	0	58		30	

 Course taught in French but the course materials are in English

* Points above 10 are taken into account in the teaching unit average

GLOSSARY

AI: Artificial Intelligence

EC: Teaching component

ECTS: European Credits Transfer System

IA2R : Computer Science, Control Engineering, Robotics, IT Networks

HCM: Hours of lectures

HTD: Hours of tutorials

HTP: Hours of labs

IoT: Internet of Things



IT: Information Technology







SIA: Autonomous and Intelligent Systems


SIR: IT networks and Information Systems

TA: Work in Autonomy







UE: Teaching Unit




2nd year - IA2R Engineering Degree											
Nature	Description	Resp.	Hrs Etu.	HCM	HTD	HTP	Conf	TA	Coef	ECTS	
SEM	SEMESTER S7 - IA2R										
UE	Math tools & Sciences for engineers	F. Collin							4	4	
EC	Data mining	M.C. Suhner	26	16	10				2		
EC	Advanced data mining	F. Collin	10		10				1		
EC	Optimisation	E.H. Laamri	24	12	12				2		
UE	Control engineering & Robotics	H. Garnier							7	7	
EC	Digital signal processing 	H. Garnier	26	10	8	8			3		
EC	Discrete event systems	J.M. Rivière	32	8	8	16			2		
EC	Autonomous mobile robots	C. Lenic	24	8		16			2		
UE	Computer science & IT networks	V. Després							7	7	
EC	IT network architectures	S. Pirlot	36	10	6	20			3		
EC	HMI	S. Wloka	36	12	24				2		
EC	Software engineering	P. Ludmann	24	6	18				2		
UE	Humanities & Social Sciences - Languages	M. Epicoco							7	7	
EC	Business management	E. Cremmel	28	20	8				2		
EC	Economy	M. Epicoco	24	20	4				2		
EC	Ethics and engineer responsibility	L. Henry	12	8	4				1		
EC	English 	D. Brown	28		28			10	2		
EC	2nd language (optional)				20				1*		
UE	IA2R Project	B. Addis	64	8	56				32	4	4
	Course evaluation of the semester	H. Garnier	2								
	Total in hours for Semester 7		396	138	196	60	0	42		29	


Nature	Description	Resp.	Hrs Etu.	HCM	HTD	HTP	Conf	TA	Coef	ECTS	
SEM	SEMESTER S8 - IA2R										
UE	Math tools & Sciences for engineers	H. Garnier							4	4	
EC	Algorithmic and AI 	F. Lauer	24	12	12				2		
EC	Artificial vision and image processing 	H. Garnier/F. Pierre	16	6	10				1		
EC	Digital communications	O. Elmazria	16	8	8				1		
UE	IoT & Cybersecurity	F. Collin							4	4	
EC	Cybersecurity	C. Joliot/P. Veutin	24		24				2		
EC	Internet of things	C. Lenic	24	8		16			2		
UE	Autonomous and Intelligent Systems (SIA minor)	H. Garnier							6	6	
EC	Data-driven modelling of dynamical systems 	H. Garnier	24	12	12				3		
EC	Industrial robots and cobot	P. Dugrain	24	2	14	8			2		
EC	Estimation for control design and supervision 	G. Millérioux	14	8	6				1		
UE	IT network and Information systems (SIR minor)	V. Després							6	6	
EC	Distributed algorithmic 	M. Valencia	24	8	16				3		
EC	Operating systems	P. Ludmann	24	8	16				2		
EC	Cryptography	V. Després/M. Valencia	14	8	6				1		
UE	Humanities & Social Sciences	M. Michel							6	6	
EC	Entrepreneurship and business start-up process	M. Michel	16	8	8				2		
EC	Agile management	P. Ludmann/S. Willmann	16	8	8				2		
EC	Communication	M. Michel	10	4	6				1		
EC	Marketing	M. Epicoco/P. Hurlin	10	10					1		
EC	2e langue (optionnel) 				20				1*		
UE	Intership								10	10	
STG	Intership as assistant engineer (12 weeks minimum to 17 weeks maximum)	C. Lenic							10		
	Course evaluation of the semester	H. Garnier	2								
	Total in hours for Semester 8 - SIA minor		220	86	108	24	0			30	
	Total in hours for Semester 8 - SIR minor		220	88	114	16	0			30	

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3rd year - IA2R Engineering Degree											
Nature	Description	Resp.	Hrs Etu.	HCM	HTD	HTP	Conf	TA	Coef	ECTS	
SEM	SEMESTER 9 - IA2R										
	SIA minor (Autonomous and Intelligent Systems)										
UE	Data science & Artificial intelligence	H. Garnier							4	4	
EC	IA & Machine learning 	F. Lauer	24	10	14				2		
EC	Deep learning 	M. Jha	24	14	10				2		
UE	Intelligent systems (SIA minor)	H. Garnier							4	4	
EC	Data-driven modelling for control 	H. Garnier	24	12	12				2		
EC	Reinforcement learning and control 	M. Jha	20	10	10				1		
EC	Computer vision for robots 	F. Pierre/H. Garnier	20	6	6	8			1		
UE	Autonomous systems (SIA minor)	G. Millérioux							6	6	
EC	Control of mobile robots 	H. Garnier/M. Jha	36	6	6	24			3		
EC	Optimal control	G. Millérioux	24	14	10				2		
EC	Control for hybrid vehicles	F. Collin/G. Colin	16	8	8				1		
UE	Cyber-physical systems (SIA minor)	F. Collin							6	6	
EC	Supervision and control-command of systems	C. Lenic	24	6		18			2		
EC	Renewable energies & Smart grids	P. Poure	24	12	12				2		
EC	Security of systems and data	G. Millérioux	20	12	8				2		
UE	Humanities & Social sciences	F. Collin							6	6	
EC	Business simulation	M. Epicoco/B. Noël	32			32			2		
EC	Team management	Y. Deceuninck	16		16				1		
EC	Large program and project management	G. Blaison	16	16					1		
EC	Sustainable development & Social responsibility	B. Ribon	16	8	8				1		
EC	Engineer job conferences (SIA minor)	F. Collin	16	8			8	8	1		
UE	SIA Project	F. Collin/G. Millérioux	64		64			32	4	4	
	Course evaluation of the semester	F. Collin	2								
	Total in hours for Semester 9 - SIA minor		418	142	184	82	8	40		30	

Nature	Description	Resp.	Hrs Etu.	HCM	HTD	HTP	Conf	TA	Coef	ECTS	
SEM	SEMESTER 9 - IA2R										
	SIR minor (IT network and Information systems)										
UE	Data science & Artificial intelligence	H. Garnier							4	4	
EC	IA & Machine learning 	F. Lauer	24	10	14				2		
EC	Deep learning 	M. Jha	24	14	10				2		
UE	Tools for IT development (SIR minor)	V. Despré							4	4	
EC	Full stack programming	Loic Gangloff/V. Despré	36	16	20				2		
EC	Software release	Julien Redel/V. Despré	24	12	12				2		
UE	Analysis Methods for IT networks (SIR minor)	B. Addis							6	6	
EC	Consensus algorithms & Blockchain 	V. Despré/M. Valencia	24	12	12				2		
EC	Performance evaluation	M. Gilson	24	12	12				2		
EC	Telecom operator networks	N. Sidot/P. Nouvelot	24	12	12				2		
UE	Administration and security of IT networks (SIR minor)	M. Gilson							6	6	
EC	Advanced infrastructures and networks	E. Gnaedinger/C. Colombo	36			36			2		
EC	Administration of IT networks	C. Colombo	24	12	12				2		
EC	Supervision of IT networks	E. Gnaedinger	24	8	16				2		
UE	Humanities & Social sciences	B. Addis							6	6	
EC	Business simulation	M. Epicoco/B. Noël	32			32			2		
EC	Team management	Y. Deceuninck	16		16				1		
EC	Large program and project management	G. Blaison	16	16					1		
EC	Sustainable development & Social responsibility	B. Ribon	16	8	8				1		
EC	Engineer job conferences (SIR minor)	B. Addis	16	8			8	8	1		
UE	SIR Project	V. Despré	64		64			32	4	4	
	Course evaluation of the semester	B. Addis	2								
	Total in hours for Semester 9 - SIR minor		426	140	208	68	8	40		30	

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Nature	Description	Resp.	Hrs Etu.	HCM	HTD	HTP	Conf	TA	Coef	ECTS	
SEM	SEMESTER 10 - IA2R										
UE	Final year study Intership	F. Collin/B. Addis								30	
	TOEIC S10										
	Total in hours for Semester 10 - SIA and SIR minors									30	