

DATA PROTECTION AND CYBER SECURITY							
Bachelor in Science and Data Engineering			2 nd COURSE		2 nd Term		
2022/2023			Mo 11:00-13:00 7.1.J02, Th 9:00-11:00 7.0J01				
Weekly Plan							
Week	Session	Session description	Student weekly work			DD/MM/YY	wkday
			Description	class	home work		
1	1	Subject description, motivation and organization.		1.66		30/01/23	Mo
1	2	1. Introduction to cybersecurity 1.1. Principles 1.2. Threats, attacks and vulnerabilities	Study threats and attacks we face today and the taxonomies of vulnerabilities	1.66	5	2/02/23	Th
2	3	1.3 Services and Security mechanisms	Study basic security services and the techniques that provide those services	1.66		6/02/23	Mo
2	4	2. Information protection principles 2.1. Information ciphering. Types of ciphers	Study how the information is protected, and different types of ciphers: stream, block	1.66	5	9/02/23	Th
3	5	2.2. Symmetric and asymmetric cryptography	Study symmetric ciphers	1.66		13/02/23	Mo
3	6	2.2. Symmetric and asymmetric cryptography	Study asymmetric ciphers	1.66	6.5	16/02/23	Th
4	7	1 st practical assignment	work in crypto assignment	1.66		20/02/23	Mo
4	8	2.3 digital signature and certificates	Study some digital fingerprinting (hashing) schemes and their security properties. Study some digital signature techniques.	1.66	6.5	23/02/23	Th
5	9	2.3 digital signature and certificates	Study how the certificates are created, the architecture and trust model of PKI, and how certificates are used in protocols	1.66		27/02/23	Mo
5	10	2.4. Confidentiality and integrity in communications: HTTPS and VPNs	Study security at transport layer (TLS) and the differences with the network layer (IPSec). Study the architecture and protocols of TLS.	1.66	6.5	2/03/23	Th
6	11	1 st practical assignment	work in crypto assignment	1.66		6/03/23	Mo
6	12	3. Privacy in Big Data. 3.1. Introduction. Privacy Enhancing Techniques (PET)	Work in assignment and read ENISA document "Privacy by design in Big Data"	1.66	6.5	9/03/23	Th
7	13	3.2 Data anonymization techniques. Utility vs privacy. Attacker model and risks. Models of privacy and anonymity	Get familiar with anonymization problems, identifiers and quasi-identifiers, and the models of anonymity.	1.66		13/03/23	Mo
7	14	3.2 Data anonymization techniques and methods	Solve problems as seen in class	1.66	6.5	16/03/23	Th
8	15	3.2 3.2 Data anonymization techniques and methods 3.3 Ciphering in big data. Homomorphic techniques. Encrypted searches.	Solve problems as seen in class	1.66		20/03/23	Mo
8	16	3.3 Ciphering in Big Data. 4. Security management and governance. 4.1. Management security systems. ISO/IEC 27000	Solve problems as seen in class. Study selected parts of standard ISO/IEC 27000	1.66	6.5	23/03/23	Th
9	17	2 nd practical assignment	Work in ABE assignment	1.66		27/03/23	Mo

9	18	4.2. Risk analysis and management. MAGERIT methodology.	Study the basis of risk analysis and management. work in assignment. Prepare MAGERIT presentation.	1.66	6.5	30/03/23	Th	
		HOLIDAYS				3/04/23	Mo	
							6/04/23	Th
							10/04/23	Mo
10	19		2 nd practical assignment	Work in ABE assignment	1.66		13/04/23	Th
11	20	Exam I	Read article about Denial of Service to prepare for group discussion in class. Prepare MAGERIT presentation	1.66	6.5	17/04/23	Mo	
11	21	Group discussion in business continuity. 5. Legal aspects of data protection. RGPD and DPO.	Study principles of RGPD.	1.66		20/04/23	Th	
12	22	MAGERIT presentations	Study MAGERIT	1.66	6.5	24/04/23	Mo	
12	23	MAGERIT presentations	Study MAGERIT.	1.66		27/04/23	Th	
13	24	MAGERIT presentations	Study MAGERIT. Read assignment of risk management and analysis with Pilar tool.	1.66	6.5	1/05/23	Mo	
13	25	3 rd practical assignment	Work in risk management and analysis with Pilar tool.	1.66		4/05/23	Th	
14	26	Review and tutoring	Solve problems and review for the exam	1.66	6.5	8/05/23	Mo	
14	27	Industrial privacy/security aspects in Big Data (invited speaker)	Reflections on privacy and security of Big Data in the industry. Study for the exam	1.66	1	11/05/23	Th	
			Subtotal	45	85			
			Total 1 (Total hours)	129				
		Extra tutoring, additional work in assignment and formatting		1	3			
		Review and study for exams			10			
			Total 2 (Total hours)	14				
			TOTAL (Maximum 160 hours)		143			