



COMILLAS

UNIVERSIDAD PONTIFICIA

ICAI

ICADE

CIHS

Syllabus
2026 - 2027

TECHNICAL SHEET OF THE SUBJECT

Data of the subject	
Subject name	Networks, Communication Systems and Cybersecurity
Subject code	E000011652
Main program	Official Master's Degree in Business Administration - MBA
Involved programs	Máster Universitario en Administración de Empresas (MBA) [First year]
Level	Posgrado Oficial Master
Quarter	Semestral
Credits	3,0 ECTS
Type	Optativa
Department	Department of Telematics and Computer Sciences
Coordinator	Germán Martín Boizas
Office hours	Appointment with teacher via e-mail
Course overview	Understanding of network technologies and systems that form the basis of current information systems and the technological revolution. The course provides a brief introduction to computer systems, software and different elements of data communication networks, together with basic concepts of risk management and cybersecurity, which will allow future business decisions with technological implications to be approached with sufficient elements of judgment. Without being a technology specialist, today's manager has to know the key factors and the technological consequences of their decisions, so the course makes an introduction to the IT strategy and how it should be aligned with the business, the management of information security in the company and how to ensure business continuity. The course ends with a brief introduction to some of the current technology trends.

Teacher Information	
Teacher	
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SPECIFIC DATA OF THE SUBJECT

Contextualization of the subject
Contribution to the professional profile of the degree
The dynamics of today's society are driven by the presence of technology in the personal and business domains. Understanding the foundations that enable this technological era allows for informed decision making and the ability to upgrade to future paradigms. This course provides an introduction to the concepts, terminology and approaches used in data processing and communication systems, with a special focus on the safeguarding and security of data. The modern executive must have a solid foundation of the different technological trends and their applications, in order to make decisions based not on fancy fashions, but on gaining a competitive advantage.



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Objectives:

- To introduce the student to a firm foundation of basic current technological concepts.
- To create in the student a rigorous vision of the challenges of cybersecurity posed by the use of new technologies in the company and assess their risks in decision making.
- To provide the student with elements of judgment at the time of approaching technological decisions that make possible the competitiveness and continuity of the business.
- To introduce an overview of the main current technological trends: IoT, Blockchain, Artificial Intelligence, etc.

Competencies - Objectives

Competences

GENERALES

CG01	Analytic and synthesis cognitive capacities applied to business situations and managing and organisation problems.
CG02	Management of data and information as key elements for decision-making and for identification, formulation and resolution of business problems.
CG03	Problem-solving and decision-making skills at a strategic, tactic and operational level with regard to a business, considering the interrelationship between the different functional and business areas.
CG04	Interpersonal skills such as listening, negotiating, persuading, working in multidisciplinary teams, in order to effectively address different tasks, and, when appropriate, capacity to exert leadership in the corresponding business organization.
CG05	Ethical commitment with a behaviour based in moral principles and those principles of the organisation when facing moral dilemmas and corporate social responsibility issues.
CG06	Time management capacity with the purpose of improving personal and team efficiency within business organizations, its environment and its management.
CG09	Knowledge, understanding and handling of tools for diagnosis of the competitive position of a company, and designing and executing the company's strategic plan.

THEMATIC BLOCKS AND CONTENTS

Contents - Thematic Blocks

Block I: Enabling Foundations and the Platform Economy

1. From Infrastructure to Cloud-Native and Edge Computing

Cloud-native architectures versus legacy systems.

"Software as a Service" (SaaS) models and accelerated time-to-market.

Edge computing for decentralized, low-latency operations.



2. The API Economy and Business Composability

APIs as digital products and monetization vectors.

Banking-as-a-Service (BaaS) and embedded finance models.

Value chain unbundling and the creation of composable businesses.

3. Ubiquitous Connectivity (5G/6G) and IoT as Product-as-a-Service

Transition from CAPEX to OPEX models.

Servitization: from selling physical assets to billing based on outcomes or usage.

Business telemetry and digital twins.

Block II: Artificial Intelligence and New Analytical Paradigms

1. Generative AI and Agentic Workflows (Agentic AI)

Transition from predictive AI to generative AI and autonomous agents.

Automation of strategic reasoning and operational execution.

Business models based on hyper-personalization at scale.

2. Data as a Strategic and Defensive Asset

Modern data architectures: Data Lakes and Data Meshes.

Training and deployment of Small Language Models (SLMs) using niche proprietary data.

Algorithmic governance and bias mitigation in decision-making.

3. Extreme Automation (Low-Code/No-Code and RPA)

Democratization of software development for business roles.

Agile building and iteration of Minimum Viable Products (MVPs).

Robotic Process Automation (RPA) to eliminate operational friction. Block

III: Trust, Decentralization, and Resilience

1. Web3, Tokenization, and Smart Contracts

Tokenization of Real-World Assets (RWA) and liquidity creation.

Decentralized Finance (DeFi) and transactional disintermediation.

Immutable supply chain traceability using DLT (Distributed Ledger Technology).



2. Cybersecurity and Privacy as a Competitive Advantage

Transition from perimeter security to Zero Trust Architecture.

Privacy-Enhancing Technologies (PETs) for B2B data monetization and collaboration.

Data sovereignty and regulatory compliance as sales enablers (NIS2, DORA, AI Act).

3. Technology Partnership Strategy

Orchestration of open ecosystems versus closed platforms.

Assessment of technical debt and vendor lock-in risk.

Decision matrices for technology deployment: Build, Buy, or Partner.

TEACHING METHODOLOGY

General methodological aspects of the subject

In-class Methodology: Activities

Teaching lectures, in which the theoretical content of the course will be presented by means of audiovisual resources and a guided discussion of the concepts presented will be encouraged.

CG02, CG04

Guided practice of cases applying the concepts learned to real or simulated situations.

CG03, CG05, CG09, CG04

Non-Presential Methodology: Activities

Personal tutored work. Expansion of the knowledge obtained in class by reading bibliography and references, as well as documenting for the execution of the proposed activities.

CG05, CG09

Individual work for the guided **resolution of cases** applying the concepts learned through personal work to real or simulated situations.

CG02, CG03, CG04

SUMMARY STUDENT WORKING HOURS

CLASSROOM HOURS			
Lectures of an expository nature	Analysis and resolution of cases and exercises, individually or collectively		
25.00	5.00		
NON-PRESENTIAL HOURS			
Analysis and resolution of cases and exercises, individually or collectively	Study and documentation	Monographic and research work, individual or group work	Tutorial sessions
15.00	15.00	10.00	5.00



EVALUATION AND CRITERIA

The use of AI to produce full assignments or substantial parts thereof, without proper citation of the source or tool used, or without explicit permission in the assignment instructions, will be considered plagiarism and therefore subject to the University's General Regulations.

Evaluation activities	Evaluation criteria	Weight
Final exam	Knowledge of the subject To pass the subject, students must obtain a 5/10 in the exam	50
Exercises & Cases	Knowledge of the subject and clarity in the exposition. Correct application of the concepts shown in class to practical situations, supporting opinions and arguments with clear reasoning and data.	30
Class attendance and participation	Active participation in class. Attendance requirement: 80%.	20

Ratings

In order to pass the course, the student must obtain at least the following:

- Attendance requirements: 80%.
- Cases and exercises: 5/10.
- Final exam: 5/10.

The final grade will be obtained by weighting all the components, and must be equal or higher than 5/10.

Those students who do not pass the first evaluation may repeat the individual exam in the recovery period. The grades achieved by the students in the rest of the components of the evaluation -with their corresponding weightings in the final grade- will be maintained in this second evaluation.

Students with attendance waiver:

- In order to pass the module, these students must present the cases and exercises and take the final exam. The final grade will be obtained by weighting all the components, and must be equal or higher than 5/10.



WORK PLAN AND SCHEDULE

Activities	Date of realization	Delivery date
Practical exercise about Software decisions	Session 2	Session 3
Cloud computing business case	Session 8	Session 10
Business continuity & crisis management case	Session 11	Session 13

BIBLIOGRAPHY AND RESOURCES

Basic Bibliography

1. Iansiti, M., & Lakhani, K. R. (2020). Competing in the Age of AI: Strategy and Leadership When Algorithms and Networks Run the World. Harvard Business Review Press.
2. Agrawal, A., Gans, J., & Goldfarb, A. (2022). [Power and Prediction: The Disruptive Economics of Artificial Intelligence] (<https://www.oreilly.com/library/view/power-and-prediction/9781647824204/>). Harvard Business Review Press.
3. Schilling, M. A. (2020). [Strategic Management of Technological Innovation] (<https://www.mheducation.com/highered/product/strategic-management-of-technological-innovation-schilling.html>) (6th ed.). McGraw-Hill Education.

Complementary Bibliography

1. Ross, J. W., Beath, C. M., & Mocker, M. (2019). [Designed for Digital: How to Architect Your Business for Sustained Success] (<https://mitpress.mit.edu/9780262542760/designed-for-digital/>). MIT Press.
2. Dehghani, Z. (2022). [Data Mesh: Delivering Data-Driven Value at Scale] (<https://www.oreilly.com/library/view/data-mesh/9781492092384/>). O'Reilly Media.
3. Harvey, C. R., Ramachandran, A., & Santoro, J. (2021). [DeFi and the Future of Finance] (<https://www.wiley.com/en-us/DeFi+and+the+Future+of+Finance-p-9781119836025>). John Wiley & Sons.