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MSC_DBDM511
DIGITAL TRANSFORMATION

Number of ECTS credits : 3
Course language : English
Course leader : EL AMRANI REDOUANE
Speakers : AGRECH Marta , EL AMRANI REDOUANE
Term: FALL

COURSE DESCRIPTION

Digital transformation is the profound change of business and organizational models to fully leverage the changes and opportunities brought by digital technologies. In recent years, firms in almost all industries have conducted a number of initiatives to explore the strategic and benefit potential of digital technologies such as AI, Big Data, IoT and Cloud Computing. These technologies are greatly changing the ways we do business, buy, work, and live. They are even influencing society and continue altering all business functions and industries.

Companies need to establish a digital transformation strategy to govern and manage these complex challenges and changes. In this course, emphasis will be on the management of digital transformation, from both process and system perspectives, as well as issues and opportunities in innovating through technology.

COURSE OBJECTIVES

Upon completion of this course, participants will be able to:
- Understand the basic concepts of Digital Transformation and apply them to business processes.
- Explore the role digital technologies have in obtaining a strategic competitive advantage.
- Analyze Digital Technologies use in back-office and front-office of organizations.
- Understand the role of Digital Technologies in business performance.
- Understand the organizational, behavioral, and political issues surrounding digital transformation in organization.

LEARNING OBJECTIVES

C4B learning goal	LG1 - Analysis
C4B learning objective	LO2 - Analyse complex situations
Outcomes	Lev. 1 - Identify and examine the various components of a complex situation

C4B learning goal	LG3 - Entrepreneurship and Innovation
C4B learning objective	LO9 - Develop innovative solutions and test them
Outcomes	Lev. 2 - Think "out of the box" to imagine and submit new ideas. Arbitrate between innovative ideas

TACKLED CONCEPTS

- Managing Businesses and understanding challenges of operating in the Digital World
- Digital Disruption vs. Digital Transformation & Digital Optimization
- Digital transformation pillars & strategy
- Digital disruptive technologies vs Traditional Technologies
- Importance of Digital Ecosystem in Digital Transformation
- Understand the organizational, behavioral, and political issues surrounding digital transformation in organization.

LEARNING METHODS

This course will combine short lectures, in-class discussions, readings, exchange of personal experiences, videos, articles, case presentation and discussion, etc. All these learning methods are used to discuss the current digital transformation concepts, principles and practices in use in the enterprise and its environment. Each session is designed to explore practical issues in the use of disruptive digital technologies to influence or implement corporate and competitive strategy of an enterprise. In order to gain maximum benefit from the course, course participants are expected to:
- Complete all assigned reading prior to the designated class
- Prepare assigned activities in advance of the class for which they are assigned.
- All class sessions are designed to augment, rather than repeat/duplicate assigned reading.

EXPECTED WORK AND EVALUATION

Class Participation : 10%
Case Study: 40%
Final Exam: 50%

BIBLIOGRAPHY

ARTICLES:

- Bailey D.E., Faraj, S., Hinds, PJ., Leonardi, PM, Von Krogh, G, (2022), “A Relational View of Emerging Technology: : A Relational Perspective on Emerging Technology and Organizing”, *Organization Science*, 33(1): 1–18
- Bodrozic, Z., Adler, P., (2022), “Alternative futures for the digital trans-formation: A macro-level Schumpeterian perspective”, *Organization Science*, 33(1):105–125.
- Canhoto, A, Quinton, S, Pera, R, Molinillo, S, Simkin, L. (2021), “Digital strategy aligning in SMEs: A dynamic capabilities perspective”, *Journal of Strategic Information Systems*, 30 (3).

EVALUATION METHODS

40 % : Continuous assessment
50 % : Final exam
10 % : Participation
60 % : Final exam

MSC_DBDM512
DIGITAL TRANSFORMATION CONSULTING

Number of ECTS credits : 3
Course language : English
Course leader : EL AMRANI REDOUANE
Speakers : GIRAUDET Tom , MAHE Charles-Yves
Term: FALL

COURSE DESCRIPTION

Digital transformation is reshaping industries, and consulting firms must adapt to meet their clients' evolving needs. This course introduces students to the basics of digital transformation in the consulting field, focusing on the changing role of consultants in today's technology-driven business environment.

The course combines theoretical insights into the consulting industry with real-life examples drawn from the instructor's professional experience. Students will also engage in a practical case study, simulating a digital transformation project with tailored coaching sessions to guide their learning.

By the end of the course, students will have the keys to understand how digital technologies impact consulting and how to approach digital transformation projects.

COURSE OBJECTIVES

The objective of this course is to provide students with an introduction to digital transformation consulting, combining both theoretical foundations and practical applications. Upon completion of this course, participants will be able to:

- Understand the evolving role of consulting in the context of digital transformation
- Identify the key challenges and opportunities that digital technologies present to consulting firms
- Explore the basic principles and frameworks used in digital transformation projects
- Apply a structured approach to solving client problems in a digital context
- Develop foundational skills in managing and supporting digital transformation initiatives through a practical case study

LEARNING OBJECTIVES

C4B learning goal	LG1 - Analysis
C4B learning objective	LO1 - Make use of critical analysis/critical thinking skills
Outcomes	Lev. 1 - Select and check information

C4B learning goal	LG2 - Action
C4B learning objective	LO5 - Evaluate, prevent and manage short, medium and long-term risks
Outcomes	Lev. 2 - Determine the potential risks plus the degree of probability and time frame, work out various risk scenarios

C4B learning goal	LG5 - Cooperation
C4B learning objective	LO15 - Act with flexibility, adaptability and intellectual curiosity
Outcomes	Lev. 1 - Recognize and accept criticism

TACKLED CONCEPTS

- The Role of Consultants in Supporting Digital Transformation Initiatives
- Key Tools and Frameworks Used in Digital Transformation Consulting
- Core Skills and Approach of a Digital Transformation Consultant
- Practical Steps in a Digital Transformation Consulting Mission
- Challenges and Limitations of Implementing Digital Transformation Strategies
- Exploration of Case Studies and Real-World Examples of Digital Transformation Projects
- Hands-on Consulting Project Simulating a Digital Transformation Initiative

LEARNING METHODS

This course combines theoretical frameworks with practical consulting tools, real-world insights, and hands-on learning. Students will engage with case studies and personal experiences shared by the instructor, participate in role-playing exercises, and work on practical scenarios. The course will alternate between small group work and plenary sessions to encourage collaborative problem-solving and peer learning.

EXPECTED WORK AND EVALUATION

Students are expected to actively participate in class to acquire the necessary theoretical concepts, receive guidelines for group work, and benefit from personalized coaching sessions. Between classes, group work is essential as students will collaborate on their case study project. Remote coaching sessions will be provided to support and guide students, helping them stay on track and make progress on their assignments. Active engagement in both the in-class and out-of-class activities is key to successfully completing the course.

BIBLIOGRAPHY

- David Brian Szabla (2024), Management Consulting in the Era of the Digital Organization.
- Fiona Czerniawska (2024), Management Consulting in Practice.
- The Boston Consulting Group: Strategy: Classic Concepts and New Perspectives
- Lampel, Joseph, Ajay Bhalla, and Kaivalya Vishnu (2010). "Wipro Consulting Services: Building an Effective Global Configuration in Business and IT Consulting Industry." *Asian Case Research Journal* 14, no. 01, 1–30.

EVALUATION METHODS

100 % : Continuous assessment

MSC_DBDM513
CHANGE MANAGEMENT IN THE AGE OF DIGITAL

Number of ECTS credits : 3
Course language : English
Course leader : EL AMRANI
REDOUANE **Speakers** : BANAHAN Eoin
Term: FALL

COURSE DESCRIPTION

The “Digital Age” is one characterised by constant change and evolution at high speed. For the business leader, the challenges of managing change in the digital age are profound. Adopting an Organisational Development approach, this course will explore how to manage change in in a fast-changing environment.
The course focuses on how to manage change effectively in a complex adaptive (human) system. In this context, the highly effective business leader must know how to manage change on three levels each of which exhibits unique challenges and key success factors, namely, at the level of the individual, the team and the organisation.
Students will acquire a suite of “practical” tools and techniques which will enable them to assess requirements and design and implement strategies for managing continuous change

COURSE OBJECTIVES

Participants will:

1. Learn how to assess the impact of change on the individual, team and organisation
2. Explore contemporary models for implementing change in a complex adaptive (human) system
3. Acquire a comprehensive suite of practical tools and techniques which will enable the business leader to manage change effectively and deal with resistance.

LEARNING OBJECTIVES

C4B learning goal	LG2 - Action
C4B learning objective	LO4 - Make proposals, take initiatives
Outcomes	Lev. 3 - Support and argue new proposals in a context where they were not envisaged

C4B learning goal	LG5 - Cooperation
C4B learning objective	LO15 - Act with flexibility, adaptability and intellectual curiosity
Outcomes	Lev. 3 - Confront several points of view and incorporate external opinions

TACKLED CONCEPTS

- The environmental context – Key challenges and key success factors
- The change process and the learning cycle
- Assumptions, perceptions and frames of reference
- The impact of change on individual behaviour
- Building and managing the change team
- Managing communication
- Organisational/strategic change leadership

LEARNING METHODS

The pedagogical approach will be predominantly one of experiential learning. A key success factor in managing change effectively in complex adaptive systems is the ability to process, and learn from experiences, adjusting approach as you progress. Therefore, participants will explore models and techniques through experiential exercises and simulations from which they will reflect on what they did and how they did it. They will then draw conclusions and generate actionable key learnings for future performance improvement in managing change.

EXPECTED WORK AND EVALUATION

Articles and book summaries will be distributed before and after each session.
- Continous Control : 50%
- Final Exam : 50%

BIBLIOGRAPHY

Leading Transformational Change: Working with Uncertainty and Navigational Principles, Lever, C. et al, Routledge, 2024
The Business of the Metaverse: How to maintain the Human Element within this New Business Reality, Hemachandran, K. & Rodriguez, R. (eds), Routledge, 2024.
Agile Learning and Management in a Digital Age, Kergel, D. et al (eds), Routledge, 2023
Competing in the Age of AI, Iansiti, M. & Lakhani, K., Harvard Business Review Press, 2020
The Organisation of Tomorrow: How AI, Blockchain and Analytics turn your Business into a Data Organisation, Van Rijmenam, M., Routledge, 2020
Digital Darwinism, Goodwin, T., Kogan page, 2018
Platform Revolution, Parker, G. et al., Norton, 2017
The Great Tech Revolution, How China is Shaping Our Future, Boutrup, C. Saxo, 2019
What's Next?, Al-Khalili (ed), Profile Books, 2017
Embracing Complexity: Strategic Perspective for an Age of Turbulence, Bolton, J., et al, Oxford University Press, 2015
Zero to Once, Thiel, P., Virgin Books, 2014

EVALUATION METHODS

40 % : Continuous assessment
60 % : Final exam

MSC_DBDM521
DATA FOR BUSINESS CHALLENGES

Number of ECTS credits : 3
Course language : English
Course leader : EL AMRANI REDOUANE
Speakers : THIERRY Marine
Term: FALL

COURSE DESCRIPTION

This course provides an introduction to the field of Data for Business, covering its core concepts, methodologies, and practical applications. The course explores the data science pipeline—from data collection and cleaning, to exploratory data analysis, statistical modeling, and python usage. Students will learn to work with large datasets, identify patterns, make predictions, and communicate findings effectively.

COURSE OBJECTIVES

- Understand the fundamentals of Data for Business and its role in solving real-world problems.
- Reinforce the expertise of students in data science by working on up-to-date business cases using data from a real context.
- Develop key skills to support and advise companies in their data journey.
- Work with data collection and cleaning techniques, ensuring that data is accurate, complete, and ready for analysis.

LEARNING OBJECTIVES

C4B learning goal	LG1 - Analysis
C4B learning objective	LO2 - Analyse complex situations
Outcomes	Lev. 1 - Identify and examine the various components of a complex situation

C4B learning goal	LG2 - Action
C4B learning objective	LO5 - Evaluate, prevent and manage short, medium and long-term risks
Outcomes	Lev. 2 - Determine the potential risks plus the degree of probability and time frame, work out various risk scenarios

TACKLED CONCEPTS

- Introduction to Python
- Data Types & Variables
- Data Quality
- Advanced Types: data structure like lists and dictionaries
- Jupyter Notebook: how to structure a data analysis in Python
- Data Exploration & Visualisation

LEARNING METHODS

Based on a bootcamp experience, Le Wagon specifically designed this online self-paced course with contents and pedagogy adapted to this MSc:

- Hosted on Learning System Platform called LEARN,
- 100% online to adapt to the rhythm of each student (a specific period and limited duration to finish the training will be defined with the school),
- Support via a dedicated Forum on LEARN,
- The course is organized into lessons, punctuated by quizzes and exercises, and ends with a final project that covers the concepts covered in the course and to be submitted by each student.

EXPECTED WORK AND EVALUATION

This course is made of lectures, exercises, quizzes and projects.
Participant's grade will reflect the way in which they present and support their topics and positions in the various learning activities used in this course.

BIBLIOGRAPHY

- Data Quality Fundamentals: A Practitioner's Guide to Building Trustworthy Data Pipelines, Barr Moses, Lior Gavish, Molly Vorwerck (2022)
- Getting Started with Python, Thomas Theis (2024)
- Python for Engineering and Scientific Computing, Veit Steinkamp (2024)

EVALUATION METHODS

100 % : Continuous assessment

MSC_DBDM522
BIG DATA ANALYTICS

Number of ECTS credits : 3
Course language : English
Course leader : EL AMRANI REDOUANE
Speakers : LIU Claude (Chien-Hung)
Term: FALL

COURSE DESCRIPTION

Everything is driven by data and it is transforming business, social interactions, and the future of our society. The explosion of data in today's digital age presents both a challenge and an opportunity.
The digitalisation of every aspect of social and economic activity and the explosion of data resulted in the creation of large volumes of both structural and unstructured data. In a parallel development, computers keep getting ever more powerful and storage ever cheaper. Today, we have the ability to reliably and cheaply store huge volumes of data, efficiently analyse them, and create values for different stakeholders. The key objective of this course are:

- Understand the basic Methodology & components of Big Data & BI
- Understand the concepts of supervised/ unsupervised learning and related algorithms
- Acquire the analytic and technical skills to distill insights to improve decision making quality.

COURSE OBJECTIVES

In this course, students will learn how to use data and analytics from real world examples of how analytics have been used to significantly improve a business or industry. Students will also work individually and in teams. They will be assigned specific big data topics and prepare team presentations for class discussion.

- Gain a high-level understanding of the key concepts of big data and big data analytics.
- Understand the different approaches used by big data, professional and management consultants to solve decision problems
- Appreciate the purpose and value of business analytics in management decision making;
- Possess a working understanding of the key data science concepts that underpin aspects of strategic decision sciences;
- Gain the practical skills to apply a range of analytical techniques used by business analysts, data scientists and management consultants, or business manager.

LEARNING OBJECTIVES

C4B learning goal	LG1 - Analysis
C4B learning objective	LO2 - Analyse complex situations
Outcomes	Lev. 2 - Formulate hypotheses to understand a complex situation, in a structured way, by mobilizing disciplinary frameworks if necessary

C4B learning goal	LG2 - Action
C4B learning objective	LO4 - Make proposals, take initiatives
Outcomes	Lev. 3 - Support and argue new proposals in a context where they were not envisaged

TACKLED CONCEPTS

- Big Data, Data Science Process and Practice
- Data visualisation and Business Intelligence
- Advanced analytics and algorithms for business

LEARNING METHODS

This course will combine short lectures, in-class discussions, hands-on exercise, readings, exchange of personal experiences, videos, articles, case presentation and discussion, etc. All these learning methods are used to discuss the current big data and analytics concepts, principles and practices in use in the enterprise and its environment. Each session is designed to explore practical issues in the use of big data and analytics to improve management decision and company performance.. In order to gain maximum benefit from the course, course participants are expected to:

- Complete all assigned reading prior to the designated class.
- Prepare assigned in advance of the class for which they are assigned.
- Attend and participate in-class hands-on exercises and case studies.
- All class sessions are designed to build big data analytics capability.

EXPECTED WORK AND EVALUATION

Students are invited to learn the necessary concepts and to complete the assigned reading and empirical applications prior to the respective session. During the course, students will be asked to deal with a series of short problem-solving exercises, to participate in focused class workshops, to deal with a corporate case and to conduct three group presentation (2 Group project presentation). Following the course completion, students are to sit a final exam.

NECESSARY SOFTWARE – HARDWARE
Students should bring their laptops to the classroom
While there is no specific minimal requirement on the CPU, data analysis is a computationally intensive task—the better your hardware, the better your experience. Finally, Java-based Altair AI Studio is platform-independent and runs on every platform for which an appropriate Java Runtime Environment (JRE) is available.

Minimum
Dual core
2GHz processor
4GB RAM
>1GB free disk space
Resolution: 1280x1024

Operating System
Windows 10 (64-bit), Windows 11 (64-bit)
MacOS X 10.13 - 14.5

- Continuous Assessment: 50 % (2 Group projects)
- Final Exam: 50%

BIBLIOGRAPHY

There is no required textbook for the class. There will be cases, articles and slides and in-class exercises, that will all be posted on the Blackboard.

Optional Recommended Readings:
Shmueli, G., Bruce, P.C., Deokar, A.V., and Patel. N.R. (2023). *Machine Learning for Business Analytics : Concepts, Techniques and Applications in RapidMiner*. Wiley

EVALUATION METHODS

50 % : Continuous assessment
50 % : Final exam

SESSIONS

1

Schedule

LECTURE & PRACTICAL WORK : 02h00

Lecture 1: Introduction
Overview of the syllabus, course topics, and requirements.
Overview of the data science platform utilised in this course.

Lecture 2: Big Data
Introduction to big data, key concepts, trends and its ecosystem
Big data component and environment
Data science methodology

Lecture 3: Big data analytics
Introduction to unsupervised and supervised learning
Introduction to RapidMiner AI Studio (Data science platform)
Data preparation: Extract, transform, loading (ETL)

Lecture 4: Big data analytics
Unsupervised learning: Clustering algorithms, business application and Hands-on exercises

Lecture 5: Big data analytics
Unsupervised learning: Association Rule Mining, business application and Hands-on exercises

Lecture 6: Big data analytics (Assignment 1a due)
Statistical analytics: Correlation and Regression (Supervised learning)
Supervised learning- Naïve Bayes, kNN, SVM, business application and hands-on exercises.
Model Comparison

Lecture 7: Big data analytics
Supervised model: decision tree, random foresting algorithms, business application and hands-on exercises
Cross-validation.

Lecture 8: Big data analytics (Assignment 1b due)
Group Project presentation (unsupervised model)

Lecture 9: Business Intelligence
Introduction to Business Intelligence, BI tools, data management (e.g. PowerQuery), and hands-on exercises.

Lecture 10: Business Intelligence
Business Intelligence, data visualisation (e.g. PowerPivot) and hands-on exercises

Lecture 11: Business Intelligence
Advanced BI (e.g. DAX)

Lecture 12: Final project presentation (Assignment 2 due)
Group Project presentation (supervised model)

MSC_DBDM523
CYBERSECURITY IN DIGITAL ECONOMY

Number of ECTS credits : 3
Course language : English
Course leader : EL AMRANI REDOUANE
Speakers : JALLOT Philippe , MAHE Charles-Yves
Term: FALL

COURSE DESCRIPTION

Cyber security is one of the world's most pressing challenges. It impacts societies, national security, critical infrastructure and the global economy. This overwhelming digital threat has ensured that cyber security skills are some of the world's most in-demand. This course will address the increasing demand for innovative approaches to the complexities and multidisciplinary character of cybersecurity policy and practice.

Beyond IT security, which focuses on securing networks and safeguarding data, cybersecurity encompasses the ability to prevent, detect and respond to threats. These capabilities are based on the realization that it is no longer a question of if they will be attacked but when and how.

COURSE OBJECTIVES

The aim is to understand cybersecurity, to analyze how it is influencing digitalization of industries and business models. It should enable students to identify the major issues that cyber security poses for companies and give them a global approach to preventing these risks.

Upon completion of this course, participants will be able to:

- Clarify and precise basic concepts of Cybersecurity and apply them to business processes
- Develop a deeper understanding and familiarity with various types of cyberattacks, cyber crimes, vulnerabilities and remedies thereto.
- Increase awareness about cyber-attack vectors and safety against cyber-frauds.
- Analyze and evaluate the cyber security risks & understand of modern information and system protection technology and methods.
- Develop skills that can help participants plan, implement, and monitor cyber security mechanisms to ensure the protection of information technology assets.

LEARNING OBJECTIVES

C4B learning goal	LG1 - Analysis
C4B learning objective	LO2 - Analyse complex situations
Outcomes	Lev. 2 - Formulate hypotheses to understand a complex situation, in a structured way, by mobilizing disciplinary frameworks if necessary

C4B learning goal	LG5 - Cooperation
C4B learning objective	LO13 - Communicate and interact
Outcomes	Lev. 2 - Develop oral and written communication capacities, adapt language and behaviour to the context

TACKLED CONCEPTS

- The principles of cybersecurity for Digital Business
- Cyber security Strategy components
- Risk Management and IT security development
- Cybersecurity Policy, Governance, Law and Compliance
- Cybersecurity Architecture and Operations

LEARNING METHODS

This course will combine short lectures, in-class discussions, readings, exchange of personal experiences, videos, articles, case presentation and discussion, etc. All these learning methods are used to discuss the current digital transformation concepts, principles and practices in use in the enterprise and its environment. Each session is designed to explore practical issues in the use of disruptive digital technologies to influence or implement corporate and competitive strategy of an enterprise.

EXPECTED WORK AND EVALUATION

- Continuous assessment: case study (50%)
- Exam: Quiz Test (50%)

BIBLIOGRAPHY

Akoto, William (2024), "Who spies on whom? Unravelling the puzzle of state-sponsored cyber economic espionage" *Journal of Peace Research*.
Ross J. Anderson : Security Engineering: A Guide to Building Dependable Distributed Systems.
P.W. Singer & Allan Friedma : Cybersecurity and Cyberwar: What Everyone Needs to Know.

EVALUATION METHODS

50 % : Continuous assessment
50 % : Final exam

MSC_DBDM531
DIGITAL BUSINESS MODELS

Number of ECTS credits : 3
Course language : English
Course leader : EL AMRANI REDOUANE
Speakers : RONTEAU SEBASTIEN
Term: FALL

COURSE DESCRIPTION

Organizations are challenged by digital trends and opportunities, evolving customer demand and expectations, globalized competition, and hence an on-going need for revising their Business models. This module will focus on specificities of digital business models. A business model is not the strategy of the company, but should rather support the strategy. This module will introduce participants to a theoretical framework to assess characteristics of digital business models, permitting to define and develop business on digital opportunities. Illustrations, through the usage of case studies and professional return on experience, will then help participants to analyze different digital business models that have been successful in driving and creating corporate value, stakeholders commitment, and customer satisfaction, through an efficient Management of Information Systems (MIS). Thus, the core question is rather how MIS can be leveraged in different business models in order to ensure both value creation and sustainability.

COURSE OBJECTIVES

- Define a business model in a digital context
- Analyze value propositions and different value chains
- Design digital platforms business models
- Evaluate high-velocity business models in digital environment
- Challenge strategic choices and advocate strategic moves

LEARNING OBJECTIVES

C4B learning goal	LG1 - Analysis
C4B learning objective	LO2 - Analyse complex situations
Outcomes	Lev. 3 - Support one's conclusions and issue well-reasoned recommendations
Details	through the case studies, students will be asked in group and individually to apply frameworks discussed in the classroom to decrypt real pure players business models

C4B learning goal	LG2 - Action
C4B learning objective	LO4 - Make proposals, take initiatives
Outcomes	Lev. 3 - Support and argue new proposals in a context where they were not envisaged
Details	through the case studies, students will be asked in group and individually to apply frameworks discussed in the classroom to formulate strategic moves according digital challenges faced by companies. they will be asked to operationalize tactics and short term strategies

TACKLED CONCEPTS

- Business models
- Digital Platforms
- Digital Merchants
- Sharing Economy
- Freemium and Subscription-based BM
- Social Networks BM

LEARNING METHODS

Lectures, plenary and group discussions, group exercises, small projects and working on real life cases.
The purpose of this diversity is to stimulate learning as well as critical and reflective thinking. A considerable amount of the learning will be generated through students' sharing of opinions, own thinking, and ideas.

EXPECTED WORK AND EVALUATION

For each session, key readings will be assigned to participants. Each session will start with a collective restitution of trends and insights associated to the topic of the day.

Participants will work in teams on different case studies. A Prospective strategic report will be assessed on those case studies. Students will be asked to mobilize on purpose frameworks discussed in the classroom and identify key challenges faced by the business and advocate a strategy to face them.

By the end of the semester, a table exam based on a case study will assess their ability to perform an analysis, a diagnosis and reveal key strategic moves on a digital business model.

BIBLIOGRAPHY

Required core course textbook:
Ronteau, S., Muzellec, L., Saxena, D., & Trabucchi, D. (2022). *Digital Business Models: The New Value Creation and Capture Mechanisms of the 21 st Century*. De Gruyter.
General Supplemental Readings
Afuah, A., & Tucci, C. L. (2000). *Internet business models and strategies: Text and cases*. McGraw-Hill Higher Education.
Choudary, S. P., Van Alstyne, M. W., & Parker, G. G. (2016). *Platform Revolution: How Networked Markets Are Transforming the Economy—And How to Make Them Work for You.*
Cusumano, M. A., Yoffie, D. B., & Gawer, A. (2019). *The Business of Platforms: Strategy in the Age of Digital Competition, Innovation, and Power*. HarperCollins Publishers.
Evans, D. S., & Schmalensee, R. (2016). *Matchmakers: The new economics of multisided platforms.* Harvard Business Review Press.
Osterwalder, A., & Pigneur, Y. (2010). *Business model generation: a handbook for visionaries, game changers, and challengers*. John Wiley & Sons.
Reillier, L. C., & Reillier, B. (2017). *Platform strategy: How to unlock the power of communities and networks to grow your business* . Routledge.
Trabucchi, D., & Buganza, T. (2023). *Platform Thinking: Read the past. Write the future.* Business Expert Press.
Sundararajan, A. (2016). *The sharing economy. The End of Employment and the Rise of.*
Additional digital resources
https://platformthinkinglabs.com
http://techcrunch.com/
https://www.crunchbase.com/
General Supplemental Readings

- See Blackboard

EVALUATION METHODS

40 % : Continuous assessment
60 % : Final exam

SESSIONS

1

Business Modeling in a Digital World

LECTURE & PRACTICAL WORK : 04h00

The focus of this session will be to familiarise students with the key characteristics behind digital business models:

- We are in a digital world
- Business Model: the value at the epicenter
- Business Modeling with Digital

2

Unlocking the Power of Networks

LECTURE & CASE STUDIES : 04h00

Assessing the economics/strategies/marketing of Digital Platforms - Economics behind Digital Platforms

- Digital Platforms - key concepts
- Mastering Network Effects
- Overcoming Chicken & Egg Paradox

3

Reshaping Markets

LECTURE & CASE STUDIES : 04h00

How digital have influenced the reshapping of industries and markets.

- Digital Brokers - Key Concepts
- Digital Characteristics behind the Sharing Economy

4

Free-based Business Models

LECTURE & CASE STUDIES : 04h00

Free is not a Business Model, in this session we will investigate the typology of free-based business models and focus on characteristics of freemium

- orgins and definitions
- characteristics
- KPIs of a freemium BM

5

Subscription-based Business Models

LECTURE & CASE STUDIES : 04h00

- Trends & Insights
- Characteristics of Value Proposition
- Characteristics of Value Architecture
- Characteristics of Value Capture
    - SAAS Key Metrics

+ Workshop: Chronicles of a predictable downturn?

Students will be asked to analyze, diagnose and possibly advocate an alternative strategy to avoid the downturn of a Freemium-based business model.

6

Social at the Core of a Digital Business?

LECTURE & CASE STUDIES : 02h00

- what hides social?
- Audience: monetizing attention and data
- a Business System for advertisers and influencers - Ethical Considerations

7

Forward Looking: is winter coming?

LECTURE & CASE STUDIES : 02h00

- Customer intimacy, data and its implications
- Winners of Today and winter of tomorrows?

MSC_DBDM532
INDUSTRY 4.0, CIRCULAR ECONOMY & SUSTAINABILITY

Number of ECTS credits : 3
Course language : English
Course leader : EL AMRANI REDOUANE
Speakers : SAUNIER Matthieu
Term: FALL

COURSE DESCRIPTION

Welcome to the exciting world of Industry 4.0! In this captivating journey to the heart of industrial innovation, our course will unveil the mysteries of the technological revolution that is radically transforming the industrial landscape.

Throughout these sessions, you will dive into the depths of Industry 4.0, discovering the foundations and key concepts that define this new era. Explore the Internet of Things (IoT), Artificial Intelligence (AI), and additive manufacturing, technologies that are redefining the limits of industrial production. Discover the crucial importance of data in strategic decision-making and learn the subtleties of cybersecurity to protect vital industrial systems.

Beyond technologies, delve into the complex world of social and ethical impacts, debating critical issues regarding employment, automation, and corporate social responsibility. Finally, explore the future with us, anticipating emerging trends and discovering exciting opportunities of Industry 5.0. Get ready to be inspired, to push the boundaries of your understanding, and to embrace the future of the industry. Welcome to our course on Industry 4.0 and Digital Transformation. Together, we will explore the infinite horizons of industrial innovation.

COURSE OBJECTIVES

- **Understanding the foundations of Industry 4.0** : Acquire a solid understanding of the concepts, technologies, and fundamental challenges of Industry 4.0, including the principles of the Internet of Things (IoT), Artificial Intelligence (AI), and additive manufacturing.
- **Know the key technologies :** Master the skills necessary to implement the key technologies of Industry 4.0, understanding their role in improving the productivity, quality, and efficiency of industrial processes.
- **Manage and analyze industrial data :** Learn to collect, store, and analyze industrial data, highlighting the importance of data analysis for informed decision-making.
- **Analyze industrial cybersecurity :** Become familiar with threats, vulnerabilities, and best practices in cybersecurity within the context of Industry 4.0, ensuring the protection of essential industrial systems.
- **Explore social and ethical impacts** : Assess the social and ethical consequences of Industry 4.0, particularly in terms of employment, automation, and corporate social responsibility. Consider the ethical implications related to AI and automation.

LEARNING OBJECTIVES

C4B learning goal	LG1 - Analysis
C4B learning objective	LO2 - Analyse complex situations
Outcomes	Lev. 3 - Support one's conclusions and issue well-reasoned recommendations

C4B learning goal	LG4 - CSR
C4B learning objective	LO11 - Identify ethical issues and act on them from an ethical perspective
Outcomes	Lev. 2 - Identify, categorize and prioritize ethical issues concerning one's activities

TACKLED CONCEPTS

- Industry 4.0 and Digital Transformation
- The Key Technologies of Industry 4.0
- Data in the Business Model of Industry 4.0
- The Business Model Strategy of Industry 4.0 and its Supply Chain
- Implementing Industry 4.0
- Industry 4.0 Experts' Feedback
- Social & Ethical Impacts
- Future Forecasts & Trends

LEARNING METHODS

This course, developed in collaboration with Baldwin Partners, adopts an engaging methodology. We have integrated gamification, a concept that turns learning into a fun and interactive experience, as well as concrete topics to create an exciting learning environment.

Each course session will combine the traditional academic approach with elements of gamification. We will cover the concepts and university theories of Industry 4.0 and Digital Transformation. This academic part will provide a solid foundation of theoretical knowledge, essential for understanding the fundamental principles of these areas.

The second part of the course will be dedicated to gamification, where we will transform these theoretical concepts into fun and exciting activities. We strongly believe that learning is more effective when it is enjoyable and engaging. By using games, simulations, and interactive challenges, we will reinforce your understanding of the topics covered and promote active participation.

This dynamic approach will allow learners to not only acquire in-depth academic knowledge but also to apply it practically in real-world contexts. By combining academic rigor with the excitement of gamification, our course aims to offer an enriching, motivating, and memorable learning experience.

EXPECTED WORK AND EVALUATION

Evaluation Section:
→ Case study for individuals (1h)
→ Group project (Over the entire semester)

BIBLIOGRAPHY

Systems 4. 0: Systems Foundations for Industry 4. 0 . Taylor & Francis Group, 2023.
Hilpert, Ulrich. *Industry 4. 0 and Digitization*. Taylor & Francis Group, 2022.
Adiljonovich, Toshpulatov Ikboljon (2020), "Influence of industry 4: 0 program on ensuring country competitiveness in the international market." *ACADEMICIA: An International Multidisciplinary Research Journal* 10, no. 5.
Alvares, Alberto, Igor Lacroix, Marco Maron, and Brayan Figueroa (2023). "Robotic additive manufacturing by laser metal deposition in the context of industry 4. 0." *Concilium* 23, no. 23.
Kraus, K. M., N. M. Kraus, and O. V. Marchenko (2021), "Formation of Industry X.0 on the Basis of Innovative-Digital Entrepreneurship and Virtual Mobility." *Business Inform* 6, no. 521.

EVALUATION METHODS

100 % : Continuous assessment

MSC_DBDM533
THE BLOCKCHAIN APPLICATIONS ACROSS INDUSTRIES

Number of ECTS credits : 3
Course language : English
Course leader : EL AMRANI REDOUANE
Speakers : DUPUY Mayeul , OLIVIER Laurent , SOK Klara
Term: FALL

COURSE DESCRIPTION

Blockchains are computer infrastructures that enable the secure and decentralized exchange of digital assets such as currencies, property deeds, certificates, or artworks, without relying on traditional trusted third parties like banks or notaries. The principle is simple: a user records data on the shared database of the blockchain, with the approval of a network of internal validators specific to each chain.

The data is recorded in an append-only manner with the aim to make them immutable. Each member of the blockchain network holds a copy of the shared database containing the history of
each transaction and plays a safekeeping role, making it impossible to unilaterally modify. The container ensures the origin and nature of the data, while the content is secured. Its potential is particularly significant for four major use cases: digital identity, decentralized financial operations, payments, and traceability. Other applications have emerged to enable the secure transfer of information on the network, including supply chain traceability for a product, thus ensuring its authenticity and auditability.

In this course, our primary emphasis will be on comprehending Blockchain technology and its various applications. Additionally, we will explore the significance of regulatory compliance, blockchain governance, and business investment. Furthermore, we will allocate time to examining Blockchain's role within supply chains

COURSE OBJECTIVES

Understand the fundamentals of Blockchain technology:

- Explain the working principles of blockchain and its decentralized architecture.
- Distinguish between different types of blockchains (public, private, hybrid).
- Analyze key technology concepts such as hashing, consensus, and smart contracts.

Master the applications of Blockchain:

- Identify the main use cases of blockchain in different sectors (finance, digital identity, supply chain, etc.).
- Analyze the advantages and challenges associated with using blockchain in these areas.
- Develop critical thinking skills on the potential impact of technology on economic and social models.

Develop practical skills:

- Explore and use popular blockchain platforms.
- Analyze and evaluate blockchain-based projects.
- Understand the regulatory implications for blockchain and its development.

Broaden your understanding of the Blockchain landscape:

- Explore the governance and security challenges of blockchain.
- Analyze emerging trends and future developments in technology.
- Discuss the ethical and social implications of blockchain

LEARNING OBJECTIVES

C4B learning goal	LG1 - Analysis
C4B learning objective	LO1 - Make use of critical analysis/critical thinking skills
Outcomes	Lev. 1 - Select and check information

C4B learning goal	LG5 - Cooperation
C4B learning objective	LO14 - Work effectively in a team
Outcomes	Lev. 2 - Contribute to the development of a collective production

TACKLED CONCEPTS

- Blockchain fundamentals: theory and practice.
- Fundamentals of blockchain technology with practical hands-on application.
- In-depth introduction and technical sessions
- Blockchain in financial services: a practical approach through case studies
- How blockchain is transforming the financial services industry
- Blockchain for Procurement and Supply Chain Management: Driving Digital Transformation

LEARNING METHODS

This course will adopt a comprehensive approach to understanding Blockchain technology and its practical applications. Our methodology involves a blend of expert lectures, interactive workshops, and real-world case studies to ensure a thorough grasp of the subject matter. Here's an overview of our approach:

1. Expert speaker session:
We will host a renowned speaker who is an authority in his field : Alexandre Stachtchenko, a renowned speaker in France and abroad, will kick off the course with an insightful presentation.

2. Interactive workshops:
Laurent Olivier To reinforce learning and provide practical insights, interactive workshops will be conducted throughout the course. These workshops will allow participants to apply theoretical concepts to real-world scenarios, facilitated by experienced instructors.

3. Specialized insights:
Klara Sok, an Investment Analyst/Portfolio Manager at Rothschild & Co Thematic Blockchain Global Equity, will provide in-depth knowledge on equity investment, regulatory compliance, and Blockchain governance. In this segment, you will dig into the strategic implications of Blockchain technology in various industries.
Mayeul Dupuy will provide valuable insights into the realm of Blockchain and supply chains, drawing from his extensive experience in the sector. With his expertise, participants will gain deeper understanding of the practical applications of Blockchain technology within supply chain management and how it influences various industries. Through case studies and discussions, Mayeul will share firsthand knowledge and real-world examples, enriching the learning experience and offering perspectives on the challenges and opportunities in this dynamic field.

EXPECTED WORK AND EVALUATION

Group project (50%): You will also be asked to form groups to prepare for one of your exams. You will have the choice between:
1. Analyzing an existing blockchain project or 2. Creating (fictionally) a blockchain project.
More information about this exam will be provided during the course.

The individual grade, which makes up 50% of the overall score, is composed of two parts:
1. A multiple-choice quiz (30%), assessing your knowledge and understanding of the course material.
2. Class engagement and participation (20%), which includes your contribution to the group project, active participation in class, and the quality of the questions and feedback you provide during your peers' presentations.

In total, the participant’s grade will reflect your engagement, the quality of your contributions during discussions, and your ability to support your positions and ideas in the various learning activities of the course

BIBLIOGRAPHY

Bitcoin: A Peer-to-Peer Electronic Cash System", Satoshi Nakamoto, October 2008, bitcoin.pdf -

- Blockchain : consolider nos atouts | Institut Montaigne
- - Blockchain beyond the hype: What is the strategic business value?, McKinsey&Company, Brant Carson,
- Giulio Romanelli, Patricia Walsh, and Askhat Zhumaev, June 2018
- https://www3.weforum.org/docs/WEF_Digital_Assets_Distributed_Ledger_Technology_2021.pdf -
- The Chainalysis Crypto Myth Busting Report, 33 crypto myth refuted, Chainalysis, July 2023

Digital Payments and Asset Tokenization

- - "Digital payments make gains but cash remains", Bank for International Settlements, Committee on
- Payments and Market Infrastructures, January 2023
- - "World Bank's Latest Digital Bond Lays the Foundation for Digitalization of Capital Markets - a case study",
- World Bank, Treasury, IBRD IDA, October 2023
- - https://www.weforum.org/events/world-economic-forum-annual-meeting-2023/sessions/tokenized-economies-co ming-alive/
- - "Growing adoption of tokenized funds raises efficiency but brings technology risks", Moody's, Investors Service, January 2024
- - Blockchain & ESG

Blockchain & Sustainable Development, Rothschild & Co Asset Management, 2023

- - Bitcoin's role in the ESG imperative, KPMG, 2023
- - Banque des Règlements Internationaux, Project Genesis 2.0, Smart Contract-based Carbon Credits
- attached to Green Bonds, Octobre 2022. Smart contract-based carbon credits attached to green bonds
- (bis.org) - PositiveBlockchain.io | Explore the Positive Blockchain Database

Blockchain & AI

- - How Blockchain and AI Complement Each Other (turing.com)
- - Artificial intelligence, blockchain and the future of Europe: How disruptive technologies create opportunities for a green and digital economy (eib.org)
- - Top 10 Use Cases Of AI In Blockchain You Need to Know (blockchain-council.org)
- VanEck's Crypto AI Revenue Predictions by 2030,2024

Blockchain & Consumer Goods Applications

- - Blockchain & Luxury, Rothschild & Co Asset Management, 2023 Blockchain, Privacy & Regulatory Compliance
- - Preventing Financial Crime in Cryptoassets,Typology Report, Elliptic_Typologies_2023_Report.pdf
- - Tornado Cash and Blockchain Privacy: A Primer for Economists and Policymakers, Federal Reserve Bank of St. Louis Review, Second Quarter 2023, 105(2), pp. 122-36. https://doi.org/10.20955/r.105.122-36

Blockchain and Supply Chain

- - Wafaa A.H. Ahmed, Bart L. MacCarthy, "Blockchain in the supply chain – A comprehensive framework for theory-driven research", Digital Business, Volume 2, Issue 2,2022, 100043, ISSN 2666-9544.
- - Jacopo A. Marullo, "Blockchain Technology in Supply Chain Management: an Empirical Analysis", CIFE IE,

EVALUATION METHODS

70 % : Continuous assessment
30 % : Final exam

MSC_DBDM541
DIGITAL TECHNOLOGIES AND ECOSYSTEMS FUNDAMENTALS

Number of ECTS credits : 3
Course language : English
Course leader : EL AMRANI REDOUANE
Term: SPRING

COURSE DESCRIPTION

This module aims to provide an overview of information systems (ERP, CRM and cloud computing) fundamentals in business. Participants should gain understanding of main digital technologies supporting the IS and the contextual conditions under which each digital solution would be appropriate, as well as the technological enterprise architecture that could enable effective and efficient adoption and use.

COURSE OBJECTIVES

Upon completion of this course, participants will be able to:

- Understand the concept of IS governance
- Evaluate how information systems can be used strategically by organizations
- Understand the role of Cloud computing in building the foundation of digitalization
- Evaluate the impact of 'ERP & CRM' technologies to businesses and organizations
- Consider how digital technology has changed work organization and jobs

LEARNING OBJECTIVES

C4B learning goal	LG2 - Action
C4B learning objective	LO5 - Evaluate, prevent and manage short, medium and long-term risks
Outcomes	Lev. 2 - Determine the potential risks plus the degree of probability and time frame, work out various risk scenarios

C4B learning goal	LG5 - Cooperation
C4B learning objective	LO13 - Communicate and interact
Outcomes	Lev. 2 - Develop oral and written communication capacities, adapt language and behaviour to the context

TACKLED CONCEPTS

- Information Systems Governance fundamentals
- Information Systems vs Information Technology
- Enterprise Systems technologies: The operational Backbone (ERP, CRM)
- How Cloud Computing Are Transforming Companies

LEARNING METHODS

This course will combine short lectures, in-class discussions, readings, exchange of personal experiences, videos, articles, case presentation and discussion, etc. All these learning methods are used to discuss the current digital transformation concepts, principles and practices in use in the enterprise and its environment. Each session is designed to explore practical issues in the use of disruptive digital technologies to influence or implement corporate and competitive strategy of an enterprise. In order to gain maximum benefit from the course, course participants are expected to:

- Complete all assigned reading prior to the designated class
- Prepare assigned activities in advance of the class for which they are assigned.
- All class sessions are designed to augment, rather than repeat/duplicate assigned reading.

EXPECTED WORK AND EVALUATION

Students are invited to learn the necessary concepts and to complete the assigned reading and empirical applications prior to the respective session. During the course, students will be asked to deal with a series of short problem-solving exercises, to participate in focused class workshops, to deal with a corporate case and to submit a written corporate assignment team-project report. Following the course completion, students are to sit a final exam.

Participant's grade will reflect the way in which they present and support their topics and positions in the various learning activities used in this course.

- Continuous Assessment : 50 %
- Final Exam : 50%

BIBLIOGRAPHY

- Cloud Computing Concepts and Technologies, Sunilkumar Manvi, Gopal Shyam (2021)
- ERP Systems for Manufacturing Supply ChainsApplications, Configuration, and Performance, Odd Jøran Sagegg, Erlend Alfnes (2019)
- Creating and Managing a CRM Platform for your Organisation, Richard Boulton (2019)

EVALUATION METHODS

MSC_DBDM542
DIGITAL CULTURE & PHILOSOPHY

Number of ECTS credits : 3
Course language : English
Course leader : EL AMRANI REDOUANE
Speakers : MAHE Charles-Yves , REED HEIDI , RUAMPS Chin
Term: SPRING

COURSE DESCRIPTION

Many of the most disruptive changes in societies around the world are digital-driven. Digital technologies are often presented as at least part of the solution for helping to drive towards a sustainable and inclusive future. Yet, at the same time, digital technologies have also been identified as a threat to our freedom and privacy. These new digital technologies tend to reduce face-to-face relationships between people, even causing unemployment and increasing the digital divide for many people and countries. In other words, the consequences of digital technologies in our work, society, and personal lives regarding the creation of a more inclusive and sustainable world are not straightforward. In this course, we are especially interested in topics that discuss and expand our understanding of how digital technologies and human values influence each other and sometimes conflict, whether at the individual, the organizational and/or the societal level.

COURSE OBJECTIVES

Upon completion of this course, participants will be able to:

- Understand the impact of digitalization within society from a global perspective.
- Analyze the consequences of digital technologies in our work, society, and personal lives regarding the creation of a more inclusive and sustainable world.
- Explore the role digital technologies have in building new business and society models.
- Discuss and expand our understanding of how digital technologies and human values influence each other.

LEARNING OBJECTIVES

C4B learning goal	LG1 - Analysis
C4B learning objective	LO3 - Use cross-disciplinary approaches
Outcomes	Lev. 3 - Provide analysis from new frameworks of reference and develop/criticize previous frameworks

C4B learning goal	LG4 - CSR
C4B learning objective	LO11 - Identify ethical issues and act on them from an ethical perspective
Outcomes	Lev. 3 - Clarify one's own positioning on ethical issues, adapt decisions to these ethical and responsible aspects

TACKLED CONCEPTS

- Ethical and philosophical approaches for digitlaization
- Human Values Crisis in a Digitizing World
- Ethics and the dark side of algorithms
- How are algorithms shaping the choices we make every day, is that what we want?
- How to make technologies more robust by involving stakeholders and embedding ethical standards?
- When to delegate decisions to machines rather than to humans – and when not to!
- Social and political philosophy: e-democracy, e-justice, e-freedom and

LEARNING METHODS

This course will combine short lectures, in-class discussions, readings, exchange of personal experiences, videos, articles, case presentations, and discussions, etc. All these learning methods are used to discuss the current digital transformation concepts, principles and practices in use in the enterprise and its environment. Each session is designed to explore practical issues in the use of disruptive digital technologies to influence or implement an enterprise's corporate and competitive strategy. In order to gain maximum benefit from the course, course participants are expected to:

- Complete all assigned reading prior to the designated class.
- Prepare assigned activities in advance of the class for which they are assigned.
- All class sessions are designed to augment rather than repeat/duplicate assigned reading.

EXPECTED WORK AND EVALUATION

Students are invited to learn the necessary concepts and to complete the assigned reading and empirical applications prior to the respective session. During the course, students will be asked to deal with a series of short problem-solving exercises, participate in focused class workshops, deal with a corporate case and submit a written corporate assignment team-project report. Following the course completion, students are to sit a final exam.

Participant's grades will reflect the way in which they present and support their topics and positions in the various learning activities used in this course.

- Continuous Assessment: 50 %
- Final Exam: 50%

BIBLIOGRAPHY

- Luciano Floridi (2023), The Ethics of Artificial Intelligence: Principles, Challenges, and Opportunities.
- Martin Ebers & Karin Sein (2025), Privacy, Data Protection and Data-driven Technologies.
- Havard Business Review Case Studies—
    - 1. Grow: Using AI to Screen Human Intelligence;
    - 2. Building a "Backdoor" to the iPhone: An Ethical Dilemma.
- Bowie, Norman E. "A Kantian Approach to Business Ethics." In Frederick, Robert E., and Robert Fredrick. 1999. *A Companion to Business Ethics*. Oxford: Blackwell Publishers
- Snoeyenbos, Milton & Humble, James. "Utilitarianism and business ethics." In Frederick, Robert E., and Robert Fredrick. 1999. *A Companion to Business Ethics*. Oxford: Blackwell Publishers Ltd.
- Solomon, Robert C. "Business Ethics and Virtue." In Frederick, Robert E., and Robert Fredrick. 1999. *A Companion to Business Ethics*. Oxford: Blackwell Publishers Ltd

EVALUATION METHODS

MSC_DBDM543
DIGITAL TRANSFORMATION AND THE FUTURE OF WORK

Number of ECTS credits : 3
Course language : English
Course leader : EL AMRANI REDOUANE
Speakers : CURRIE WENDY
Term: SPRING

COURSE DESCRIPTION

The past six decades have witnessed accelerated growth in digital technology across all industry and not-for-profit sectors. Today, generative artificial intelligence, robotic process automation, and machine learning comprise a new wave of business computing with significant implications for the future of work. Automation anxieties proliferate as digital technology threatens to eliminate not only semi- or un-skilled work, but also professional jobs. One estimate is the displacement of up to thirty percent of current work activities by 2030. This course focuses on academic and practitioner studies on the 'future of work.' Use cases are evaluated on the impact of digital technology on the displacement, augmentation, and re-configuration of work organization in the 21st century.

COURSE OBJECTIVES

The aim of this course is to analyze past and present debates and practices on the impact of digital technology on business, society, and citizens. Upon completion of this course, participants will be able to:

- Gain an appreciation of how digital technology has impacted business and society over the past six decades
- Critically analyze debates and scenarios on techno-optimism versus techno-pessimism which polarize views and opinions on the impact of digital tools and platforms on work organization and practice
- Evaluate use cases on the impact of automation on corporate performance and productivity across industrial sectors
- Assess the evidence from cross-national comparisons job creation and job/task displacement from automation
- Understand different geo-political approaches to the regulation of digital technology designed to enhance the data privacy and security of citizens

LEARNING OBJECTIVES

C4B learning goal	LG1 - Analysis
C4B learning objective	LO2 - Analyse complex situations
Outcomes	Lev. 3 - Support one's conclusions and issue well-reasoned recommendations

C4B learning goal	LG4 - CSR
C4B learning objective	LO11 - Identify ethical issues and act on them from an ethical perspective
Outcomes	Lev. 2 - Identify, categorize and prioritize ethical issues concerning one's activities

C4B learning goal	LG5 - Cooperation
C4B learning objective	LO13 - Communicate and interact
Outcomes	Lev. 2 - Develop oral and written communication capacities, adapt language and behaviour to the context

TACKLED CONCEPTS

- Digital Transformation, Digital Disruption, Creative Destruction
- Techno-optimism and Techno-pessimism, Automation Anxiety
- Waves of Business Computing
- Technological Unemployment, Job/task Displacement/Augmentation
- Productivity Paradox, Stakeholder Theory
- Digital Literacy, Data Privacy and Security
- Governance, Regulation, Ethics

LEARNING METHODS

This course will combine lectures, in-class discussions, readings, exchange of personal experiences, videos, articles, case presentation, and critical thinking. The learning methods focus on the current digital transformation concepts, principles, and practices in business and society. The sessions explore theoretical and practical issues relating to the impact of digital technology on work organization. Specific attention focuses on generative artificial intelligence use cases and job/task displacement or augmentation. To gain maximum benefit from the course, participants are expected to:

- Complete all mandatory assigned readings prior to attending the the session
- Prepare individual or team assignments in advance of the session
- Engage in critical analysis of ALL the topics covered in the course and participate in class discussion

EXPECTED WORK AND EVALUATION

An important pedagogical goal of the course is for participants to work with team members to engage in debate, discussion, problem solving, and critical thinking.

The course content covers complex political, economic, societal, and technological challenges of digital technology. Participants are given questions to answer in the form of a team presentation to the class.

Audience participants are expected to respond in the class Q&A session following the team presentation. Each team is given a specific topic which requires individual research and reading by all members. It is important that presentations are coherent and clearly structured.

Participants will sit an individual final exam which is based on the lectures given during the course. It is essential that participants acquire a detailed understanding of the lecture material covered in the course.

Participant's grade will reflect the way in which they present and support their topics and positions in the various learning activities used in this course.

- Continuous Assessment : 50 %
- Final Exam : 50%

BIBLIOGRAPHY

- Domingos, P. (2018) *The Master Algorithm*. Basic Books.
- Fry, H. (2018). *Hello World: how to be human in the age of the machine.* Transworld Publishers Ltd.
- Gowing, N. and Langdon, C. (2018). *Thinking the unthinkable: A new imperative for leadership in the digital age.* John Catt Educational Limited.
- Hughes, C. (2018). *Fair shot: rethinking inequality and how we earn.* Bloomsbury.
- Keen, A. (2018). *How to fix the future: Staying human in the digital age.* Atlantic Books.
- Russell, S. (2019) Human Compatible: Artificial Intelligence and the problem of control, Penguin.
- Schwab, K. (2017). *The fourth industrial revolution*. London.
- Stockwood, J. (2018). *Reboot: A blueprint for happy, human business in the digital age.* Virgin.
- Tegmark, M. (2018) *Life 3.0.* Penguin.
- Zuboff, S. (2019). *The age of surveillance capitalism.* Profile Books.

EVALUATION METHODS

MSC_DBDM551
PROJECT MANAGEMENT IN DIGITAL TRANSFORMATION

Number of ECTS credits : 3
Course language : English
Course leader : EL AMRANI REDOUANE
Term: SPRING

COURSE DESCRIPTION

Project managers play a key role in leading, planning and implementing critical projects to help their organizations succeed. In this course, you'll discover foundational project management terminology and gain a deeper understanding of the role and responsibilities of a project manager. Furthermore, with the advancement of digital disruptive technologies, new projects with different requirements and problems are coming onto the horizon at a rapid speed. After the introduction to all aspects of project management and how we apply the method of the Project Management Institute on a project, it is essential for project managers to understand how digital technologies project management is distinct and how they can best prepare for the changing landscape.

COURSE OBJECTIVES

Upon completion of this course, participants will be able to:

- Understand the foundational knowledge of how projects are managed and initiated.
- Explore project management roles and responsibilities
- Describe the life cycle of a project and explain the significance of each phase.
- Identify project risks and develop risk mitigation strategies
- Compare different program management methodologies and approaches and determine which is most effective for a given project.

LEARNING OBJECTIVES

C4B learning goal	LG2 - Action
C4B learning objective	LO5 - Evaluate, prevent and manage short, medium and long-term risks
Outcomes	Lev. 2 - Determine the potential risks plus the degree of probability and time frame, work out various risk scenarios

C4B learning goal	LG5 - Cooperation
C4B learning objective	LO13 - Communicate and interact
Outcomes	Lev. 2 - Develop oral and written communication capacities, adapt language and behaviour to the context

TACKLED CONCEPTS

- Introduction to PMI and the Fundamentals of Project Management
- Project Lifecycle and the Five Process Groups
- MS Project software and its Features
- Planning Process Group & Creation of a Work Breakdown Structure (WBS), PERT, Gantt
- Governance of Projects
- Agile approaches for digital projects (Scrum & Kanban)

LEARNING METHODS

This course will combine short lectures, in-class discussions, readings, exchange of personal experiences, videos, articles, case presentation and discussion, etc. All these learning methods are used to discuss the current digital transformation concepts, principles and practices in use in the enterprise and its environment. Each session is designed to explore practical issues in the use of disruptive digital technologies to influence or implement corporate and competitive strategy of an enterprise. In order to gain maximum benefit from the course, course participants are expected to:

- Complete all assigned reading prior to the designated class
- Prepare assigned activities in advance of the class for which they are assigned.
- All class sessions are designed to augment, rather than repeat/duplicate assigned reading.

EXPECTED WORK AND EVALUATION

Students are invited to learn the necessary concepts and to complete the assigned reading and empirical applications prior to the respective session. During the course, students will be asked to deal with a series of short problem-solving exercises, to participate in focused class workshops, to deal with a corporate case and to submit a written corporate assignment team-project report. Following the course completion, students are to sit a final exam.

Participant's grade will reflect the way in which they present and support their topics and positions in the various learning activities used in this course.

- Continuous Assessment : 50 %
- Final Exam : 50%

BIBLIOGRAPHY

- Martina Huemann & Rodney Turner (2024), The Handbook of Project Management (6th Edition).
- Gregorc, Walter, and Elisabeth Bittner (2010), *Experiencing project management: Projects, challenges & lessons learned* . Erlangen: Publicis.
- W, Bothell Timothy, and Snead G. Lynne, eds. (2002), *The project management scorecard: Measuring the success of project management solutions*. Amsterdam: Butterworth-Heinemann.
- Magano, José, Cláudia Sousa Silva, and Micaela Martins (2021), "Project Management in the Biotech Context: Exploring the Interrelation between Maturity and Sustainable Project Management." *Sustainability* 13, no. 21.

EVALUATION METHODS

MSC_DBDM552
COMPETING IN THE AGE OF ARTIFICIAL INTELLIGENCE

Number of ECTS credits : 3
Course language : English
Course leader : EL AMRANI REDOUANE
Speakers : DAVID Nicolas , EL AMRANI REDOUANE
Term: SPRING

COURSE DESCRIPTION

Artificial Intelligence (AI) is rapidly emerging as the most important and transformative technology of our time. Recent advances, particularly in machine learning, a computer's ability to improve its performance without human instruction, have held to a rapid proliferation of new applications that are changing the game for companies in almost all industries. AI can help accomplish many business activities with greater accuracy and at a fraction of the time, it would take humans to do the same.

The effects of AI will only be magnified in the coming decade, as industries transform their core processes and business models to take advantage of its capabilities. Companies need to establish An AI strategy to govern and manage these complex challenges and changes. In this course, emphasis will be on the management of AI, from both process and system perspectives, as well as issues and opportunities in innovating through technology.

COURSE OBJECTIVES

Upon completion of this course, participants will be able to:

- Understand the basic concepts of AI and apply them to business processes.
- Explore the role AI technologies have in obtaining a strategic competitive advantage and act on the tremendous opportunities AI offers.
- Give managers an understanding of the growing deployment of AI in business
- Understand when, and when not, to rely on AI
- Analyze AI Technologies use in back-office and front-office of organizations.
- Understand ethical and privacy issues surrounding AI in organization and the limits and dangers of blindly relying on algorithms

LEARNING OBJECTIVES

C4B learning goal	LG1 - Analysis
C4B learning objective	LO1 - Make use of critical analysis/critical thinking skills
Outcomes	Lev. 1 - Select and check information

C4B learning goal	LG2 - Action
C4B learning objective	LO5 - Evaluate, prevent and manage short, medium and long-term risks
Outcomes	Lev. 3 - Prioritize risk scenarios, decide a risk management plan and ensure the implementation of a risk management/prevention plan

TACKLED CONCEPTS

Artificial Intelligence
AI and apply them to back & front office processes
Machine Learning, Deep Learning & Reinforcement Learning
AI project : PoC approach, testing environment, deployment phase
AI strategy & project
Privacy & Ethics issues

LEARNING METHODS

This course will combine discussions of current Artificial Intelligence concepts, principles and practices in use in the organization and its environment. Each session is designed to explore practical issues in the use of digital technologies to influence or implement corporate and competitive strategy of an enterprise. In order to gain maximum benefit from the course, course participants are expected to:

- Complete all assigned reading prior to the designated class
- Prepare assigned activities in advance of the class for which they are assigned. All class sessions are designed to augment, rather than repeat/duplicate assigned reading.
- Participant's grade will reflect the way in which they present and support their topics and positions in the various learning activities used in this course.

EXPECTED WORK AND EVALUATION

Participant's grade will reflect the way in which they present and support their topics and positions in the various learning activities used in this course.
- Class Participation : 20%
- Case Study : 40%
- Final Exam : 40%

BIBLIOGRAPHY

- Toorajipour R., Sohrabpour V., Nazarpour A., Oghazi P., Fischl M. (2021), « Artificial intelligence in supply chain management: A systematic literature review", J. Bus. Res., 122, pp. 502-517
- Amirkolaii, K. N., Baboli, A., Shahzad, M. K., & Tonadre, R. (2017). Demand forecasting for irregular demands in business aircraft spare parts supply chains by using artificial intelligence (AI).
- Byun, S.-E., Han, S., Kim, H., & Centrallo, C. (2020). US small retail businesses' perception of competition: Looking through a lens of fear, confidence, or cooperation. Journal of Retailing and Consumer Services, 52,
- Camarillo, A., Ríos, J., & Althoff, K.-D. (2018). Knowledge-based multi-agent system for manufacturing problem solving process in production plants. Journal of Manufacturing Systems, 47, 115–127.
- Canhoto, A. I., & Clear, F. (2020). Artificial intelligence and machine learning as business tools: A framework for diagnosing value destruction potential. Bus. Horiz. Artificial Intelligence and Machine Learning, 63, 183–193
- Dimitrakopoulos, G., Uden, L., Varlamis, I., 2020. Chapter 16 - Transportation network applications, in: Dimitrakopoulos, G., Uden, L., Varlamis, I. (Eds.), The Future of Intelligent Transport Systems. Elsevier, pp. 175–188

EVALUATION METHODS

MSC_DBDM562_SS
THE ART OF COMMUNICATION: EFFECTIVE TECHNIQUES FOR MANAGERS - *ELECTIVE COURSE*

Number of ECTS credits : 3
Course language : English
Course leader : BURLAT CLAIRE
Speakers : PRUSKER ESTELLE , TAYLOR ANDREW
Term: SPRING

☰COURSE DESCRIPTION

How to deliver the right message, to the right audience (employees, customers, media, etc.), in the right format, whether for personal or corporate branding.

☰ COURSE OBJECTIVES

1. Understand the importance of how a message is communicated
2. Improve confidence and skill in undertaking effective communication in English
3. Comprehend the influence of the public targeted on the nature of the message and its communication
4. Analyse the place of artificial intelligence in the art of convincing
5. Anticipate communication strategies in real-life business situations
6. Master effective personal and corporate branding

☰ TACKLED CONCEPTS

1. Data storytelling
2. Powerful writing
3. Media training
4. Effective presentations
5. Chairing meetings
6. Public speaking

☰ LEARNING METHODS

Sessions will include a high level of practical work, replicating as far as possible real-life business applications: employee presentations, investor pitches, press conferences, public meetings and media speaking. A large part of the course will involve role-playing, which will encourage students to improve their oral and written communication skills in situations as close as possible to the reality of organisations.
The sessions will take place at the Mediacampus to organise the role-playing in the TV and radio studios.
Generative AI will be used to produce some of the deliverables and to encourage students to take a critical distance in terms of such technology.

☰ EXPECTED WORK AND EVALUATION

Evaluation will be divided between individual continuous assessment (30% of the final grade) and a group mark for a final practical project (70% of the final grade)

☰ BIBLIOGRAPHY

All of below are available via Audencia's Knowledge Hub:

- Smart brevity: the power of saying more with less, Jim VandeHai, Mike Allen, Roy Schwartz, *Nicolas Brealy*, 2023
- Free your pitch: make presentations people remember, Corine Waroquiers, Sylvain Bureau, Nicolas Gros, *Pearson*, 2018
- The pyramid principle, Barbara Minto, *Pearson*, 2021
- Style: lessons in clarity and grace, Jospeh Bizup, Jospeh M Williams, *Pearson*, 2017
- Accrochez votre auditoire : les clés pour susciter (enfin) l'écoute et l'intérêt, Martine Compagnon, *Eyrolles*, 2020
- Petit traité de manipulation à l'usage des honnêtes gens, Robert-Vincent Joule, Jean-Léon Beauvois, *Universitaires de Grenoble (PUG),* 2014
- Storytelling : l'art de convaincre par le récit, Jean-Marc Guscetti, *Slatkine*,2014

☰ EVALUATION METHODS

MSC_DBDM563_GAIA

TRANSITION SCENARIOS FOR CORPORATE CLIMATE ACTION - *ELECTIVE COURSE*

Number of ECTS credits : 3
Course language : English
Course leader : BURLAT CLAIRE
Speakers : AVEDISSIAN Magy , FARNOOSH Arash , LAMBERT-LALITTE Sidney , SCHENCKERY Maxime , TAYLOR ANDREW
Term: FALL

COURSE DESCRIPTION

The course focuses on economics and management signposts of the energy industry to explore and understand possible trajectories and the key drivers of the current transformation.

The course encompasses analysis of: supply and demand global balances and outlooks, energy value chains, price discovery mechanisms, main players actions, renewable energy evolution/disruption, electricity industry digitalization, environmental/climate policies and carbon markets.

Every energy value chains (oil, natural gas, coal, nuclear, electricity and renewables) are reviewed under the lenses of energy transition and climate goals, while emphasizing on the role of digitalization as a lever of decarbonization of the energy sector.

COURSE OBJECTIVES

Students will be able to:

- Gain a broad understanding of the energy value chains.
- Build energy and climate data visuals to highlight current and future trends.
- Identify the main determinants of energy and climate scenarios.
- Recognize the main factors affecting the global climate system and their interactions with the energy sector.
- Manage future energy and greenhouse gas emissions budgets within a company.
- Assess the techno-economic issues of energy production and consumption
- properly format analyzed data to create a machine learning model from scratch.

Use (no-code) machine learning models and analyze results on energy related issues.

LEARNING OBJECTIVES

C4B learning goal	LG1 - Analysis
C4B learning objective	LO2 - Analyse complex situations
Outcomes	Lev. 2 - Formulate hypotheses to understand a complex situation, in a structured way, by mobilizing disciplinary frameworks if necessary

C4B learning goal	LG4 - CSR
C4B learning objective	LO12 - Take a decision from economic, social and environmental perspectives
Outcomes	Lev. 3 - Make choices and arbitrate according to sustainability criteria

TACKLED CONCEPTS

- Energies value chains, market structures and its fundamental characteristics.
- Energy transition challenges and key drivers: evolution or disruption?
- Global energy outlooks (IEA, IPCC, RTE, ADEME, etc) assumptions, usages and limits
- Fundamentals of power generation and transformation trends towards net-zero emissions electricity systems
- Climate change and emissions scenarios in line with the Paris Agreement

Environmental issues economic treatment, climate governance, carbon emission management and related energy policies

LEARNING METHODS

The methodologies used in the course will include lectures and case-studies using MS Excel, serious-games.

EXPECTED WORK AND EVALUATION

In class exercises and case studies

- Individual exam (40%) : *Based on courses and cases addressed in class*
- Group project (60%): Report & presentation:

  Digital strategy for a net-zero emissions scenario in a company

  (Focused on real cases from the energy or mobility sectors)

BIBLIOGRAPHY

- IEA World Energy Outlook and various outlooks
- Energy Institute Statistical review of energy
- RTE (2019). Futurs Energétiques 2050.
- ADEME. Base Carbone.
- IPCC (2021-2022). Sixth Assessment Report.
- Various websites on energy and climate.
- Seba T. Clean Disruption 2011 and videos.
- Luciani & Hafner, 2022. The Palgrave Handbook of International Energy Economics. Springer Nature.
- Stoft S, 2002. Power System Economics. Wiley-IEEE press.

EVALUATION METHODS

SESSIONS

1

Energy transition: evolution or disruption?

LECTURE : 02h00

- Global energy supply and demand
- The energy trilemma
- Key features of energy
- Energy transition: lessons from the past and disruption

2

Oil and gas fundamentals:

LECTURE : 02h00

Production, reserves, transport, decarbonation, and geopolitical consequences:

- The end of oil?
- Natural gas, a bridge to a less carbonated future?
- The role of digitalization in the oil and gas sector

3

Energy scenarios assumptions et mechanisms

LECTURE : 02h00

What future of energies in the many outlooks? Key assumptions

- Energies regional trajectories
- Energies usage outlook per industry segments

4

Electricity fundamentals

LECTURE : 02h00

- Power generation means
- Electricity chain structure
- Market versus monopoly

5

Power markets

LECTURE : 02h00

- Electricity market organization
- Cases from around the world
- Wholesale and retail markets

6

Electricity industry digitalization

LECTURE : 02h00

- Variable sources of electricity and grid management needs
- Digitalization & smart grids
- Distributed generation

7

Environment, climate and energy

LECTURE : 02h00

- Fundamentals of climate science
- Emissions and energy scenarios analysis in line with the Paris Agreement

8

Climate policy

LECTURE : 02h00

- Climate negotiations and policy analysis
- Introduction to carbon pricing

9

Managing a carbon budget in a company

LECTURE : 02h00

- Carbon pricing global overview
- The case of the EU Emissions Trading Scheme

- Serious game

10

Machine Learning Fundamentals in Energy (1)

LECTURE : 02h00

- Introduction
- Regression
- Classification

11

Machine Learning Applied to Energy (2)

LECTURE : 02h00

- Hands on model building pipelines for Energy/Power industry related use cases (solar, wind, O&G, …)
- Best Practices and problem statement building

12

Presentation

LECTURE : 02h00

20 minutes per group (of 4 to 5 students)

Digital strategy for a net-zero emissions scenario in a company
(Focused on real cases from the energy or mobility sectors)