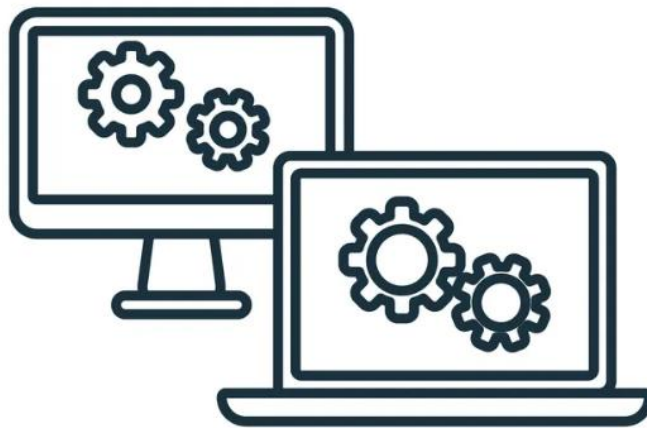


MSc Digital Business & Data Management

September 2024 – April 2025



CODE: Tbc
Course title: DIGITAL TRANSFORMATION
Term : FALL

Teaching hours: 24 hours
Number of credits: 3
Teaching language: ☒English ☐French
Course leader: (Filled in by Program)
Speakers: Redouane EL Amrani

≡ COURSE DESCRIPTION

Digital Disruption is shaking up the *status quo* of every industry and redefining the way consumers engage and companies compete. However, many firms, large & SMEs, try to transform their business without changing their “business as usual” culture, process, and capabilities. Digital transformation is no longer a question of ‘if’ but rather ‘how fast?’ Digital Transformation is the profound change of business and organizational models to fully leverage the changes and opportunities brought by digital technologies. Therefore, 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

The aim is to understand the digital disruption, to analyze how digital transformation is impacting industries and business models. Upon completion of this course, participants will be able to:

- Clarify and precise basic concepts of Digital disruption, Digital Economy, Digital Transformation
- Understand the concepts of Digital Transformation vs Organizational Transformation and apply them to business processes
- Define main pillars and blocks Digital Transformation Strategy
- Explore the role digital technologies have in obtaining a strategic competitive advantage.
- Analyze Digital Technologies use in back-office and front office of organizations (IA, Big Data, Blockchain and Cloud Computing) and explore their role in obtaining a strategic competitive advantage.
- Change Management for Digital Transformation : Human Capital & Digital Talent Gap
- Understand the organizational, behavioral, and political issues surrounding digital transformation in organization.

≡ TACKLED CONCEPTS

- Digital Transformation, Digital Disruption & Digital Optimization
- Digital Transformation vs Organizational Transformation
- Blocks Digital Transformation Strategy Concept
- Digital Transformation & Industry 4.0
- Digital Transformation & Digital Ecosystems
- Disruptive digital technologies : Big Data, Cloud Computing, Enterprise Systems

≡ 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.

≡ ASSIGNMENTS AND EXPECTED WORK

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.

≡ BIBLIOGRAPHY – COURSE MATERIAL

- Bailey D.E., Faraj, S., Hinds, P.J., Leonardi, P.M., 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 transformation: 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).
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- Hanelt, A. Bohnsack, B. Marz, D. Antunes, C (2021), A systematic review of the literature on digital transformation: insights and implications for strategy and organizational change, *Journal of Management Studies*, 1-36
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- Hartl, E., Hess, T., (2017), "The role of cultural values for digital transformation: Insights from a Delphi study", 23rd Americas Conference on Information Systems, Boston, 10-12 August.
- Hein, A. Schrieck, M. Riasanow, T. Setzke, D. Wiesche, M., Böhm, M., (2020). Digital platform ecosystems. *Electronic Markets*, 30(1), 87–98.
- Hess, T., Matt, C., Benlian, A. Wiesböck, F. (2016). Options for formulating a digital transformation strategy. *MIS Quarterly Executive*, 15(2).

- Jacobides M, Cennamo C, Gawer A, (2018), Towards a Theory of Ecosystems, *Strategic Management Journal*, 39/8, 2255-2276.
- Karimi, J. Walter, Z, (2015), The role of dynamic capabilities in responding to digital disruption: a factor-based study of the newspaper industry, *Journal of Management Information Systems*, 32 (1), 39-81
- Kim J, Paek B, Lee H. (2022), "Exploring Innovation Ecosystem of Incumbents in the Face of Technological Discontinuities: Automobile Firms". *Sustainability*; 14(3):1606.
- Llopis-Albert, C., Rubio, F., Valero, F. (2021). Impact of digital transformation on the automotive industry. *Technological Forecasting and Social Change*, vol. 162: 120343.

≡ **EVALUATION METHODS**

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%

≡ **SESSIONS**

- **Session 1 & 2: Managing Businesses in the digital world**
 - Challenges of Operating in the Digital World : Why Digital Disruption Matter?
 - Digital Transformation : Physical, Digital & Phygital.
 - What is the price of your organization's survival: the most critical questions about Digital Transformation?
 - Incumbents' Dilemma : how to deal with Digital Disruption ?
 - Role of Digital Transformation in achieving competitive advantage and operational efficiency
 - Companies cases : Nokia, Kodak, Blockbuster
- **Session 3 & 4 : Opening the Black Box of Digital Transformation**
 - What's Digital transformation ? What is not Digital Transformation ?
 - Why Companies are reinventing themselves ?
 - Digital transformation is a journey, not a destination
 - Why Digital Transformation is complex & risky ?
 - Companies cases : GE, Ford, Nike & Corning
- **Session 5 : Industry 4.0, New Challenges for Digital Transformation**
 - Digital Transformation & Industry 4.0 : Why, How & What ?
 - Digital Transformation of Manufacturing in the 4th Industrial Revolution
 - Digital Platforms, Digital Twin, Industrial IoT, Digital Ecosystems
 - Industry 4.0 Strategy and Implementation : Benefits and Challenges
 - Companies cases : Siemens, GE, BMW, Faurecia
- **Session 6: Main Pitfalls of Digital Transformation and How to Avoid them**
 - Digital Transformation & Technological Determinism
 - Digital Transformation & Strategic Alignment
 - Digital Transformation & Organizational Maturity
 - Digital Transformation & Human Assets vs. Digital Skill Gap
 - Digital Transformation & Data Quality
 - Digital Transformation & Operational Backbone Integration
 - Companies cases : VW, Adidas, L'Oréal

- **Session 7 & 8 : Digital Transformation Is Possible Without Big Data Analytics ?**
 - Why Organizations need Big Data Analytics within Digital Transformation?
 - Big Data strategy, technics and tools
 - Business Analytics to Support Decision Making
 - Big Data Ecosystem & Solutions (Hadoop, MongoDB, MapReduce)
 - Data Analytics and Visualization
 - Companies cases : Procter & Gumble, Coca-Cola, Gap
- **Session 9 : Using Cloud Computing to enable Digital Transformation**
 - The role of Cloud Computing in supporting Digital transformation
 - Cloud types & Characteristics : SaaS / PaaS / IaaS
 - Cloud Computing Value, Limits and challenges
 - On-Premise vs. Cloud computing : Hybrid IT Challenges & Strategies
 - Companies cases : AWS, Ali Baba, Mohawk
- **Session 10 : Enterprise Systems : The Operational Backbone of any Digital Transformation**
 - Why Enterprise Systems are the Operational Backbone for Digital Transformation?
 - Operational Excellence in the Digital Transformation Age.
 - Enterprise Systems Implementation strategies / Operations and Post-Implementation
 - The Future of Enterprise Systems in the New Digital World
 - Companies cases : SAP, Salesforce, Workday
- **Session 11 & 12: Articles & case studies presentations**
 - Company experience with Digital Transformation projects from different industries

CODE: Tbc
Course title: CONSULTING IN DIGITAL ECONOMY
Term: FALL

Teaching hours: 24 hours
Number of credits: 3
Teaching language: English
Course leader: Tbc
Speakers: Tbc

≡ **COURSE DESCRIPTION**

Digital disruption is hitting businesses of all kinds and the consulting industry is no exception. IT consulting firms have realized that, to address their client's future needs, they have to also transform their business model by developing a diverse range of new capabilities and specific skills. The objective is to proactively help their clients to understand the potential benefits of digital transformation and implement the right digital solutions that will add value to their client's business model and chain value.

This course will be jointly designed with experts from DT consulting industry such as CGI, CapGemini, Accenture, IBM, Sopra Steria and BearingPoint.

≡ **COURSE OBJECTIVES**

The aim of this course is to develop management consulting skills and strategic thinking to deal with new digital realities and perspectives. Upon completion of this course, participants will be able to:

- Understand the digital disruption impacting consulting firms
- Understand the current job market, potential and challenges for digital consulting career path.
- Explore the nature and the foundations of digital transformation and learn how to be a digital transformation consultant
- Define and lead Digital Transformation Strategy within organizations
- Explore the role digital technologies in developing new digital competitive advantage
- Apply digital consulting process and frameworks to Digital Transformation projects (analysis of needs of users, write proposals to clients, pricing, negotiation, defining a Digital Transformation roadmap, etc.)

≡ **TACKLED CONCEPTS**

- Digital Transformation impact on Consulting Business Models and Capabilities
- Digital Transformation vs. Management Consulting Industry
- New Digital Consulting Platforms (the employee vs the freelancer status)
- Job of Digital Transformation consultant: Approach, tools and Consulting process
- Typical Consulting Mission in Digital Transformation
- Challenges and limits of Digital Transformation Consulting
- Analyzing real case studies & concrete examples of large-scale implementation
- Professional Consulting Project with 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 disruption concepts, principles and practices in use in the consulting industry 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.

≡ **ASSIGNMENTS AND EXPECTED WORK**

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.

≡ **BIBLIOGRAPHY – COURSE MATERIAL**

Tbc

≡ **EVALUATION METHODS**

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%

≡ **SESSIONS**

- **SESSION 1: Introducing digital transformation for consultants**
- **SESSION 2: How to build the digital mind-set**
- **SESSION 3: Frameworks and tools for leading digital consulting projects**
- **SESSION 4: Essential Data for managing digital consulting projects**
- **SESSION 5: Operating models, roles and responsibilities of digital consultant**
- **SESSION 6: Roadmap strategy, difficulties and solutions**
- **SESSION 7: The business of algorithms**
- **SESSION 8: The business of data**
- **SESSION 9: Leading and managing digital innovation with start-ups**
- **SESSION 10: Build digital transformation frameworks and deliver insights**
- **SESSION 11: Case Studies Presentation / Feedback**
- **SESSION 12: Case Studies Presentation / Feedback**

CODE: Tbc

Course title: INDUSTRY 4.0, CIRCULAR ECONOMY & SUSTAINABILITY

Term: FALL

Teaching hours: 24 hours

Number of credits: 3

Teaching language: ☒English ☐French

Course leader: Tbc

Speakers: Tbc

≡ COURSE DESCRIPTION

Industry 4.0 is a novel paradigm for industrial production in which digitization plays a fundamental role. With Industry 4.0, firms will face unprecedented changes in how they design, source, produce and distribute physical products via the use of many digital technologies. The objective of this course is to address the new challenges of Industry 4.0 and circular economy, understand its main components, and prepare participants to manage the transition of large businesses and SMEs to Industry 4.0 and to meet present and future scientific and technological challenges in digital industries and enterprises. This course will be jointly designed with experts in Industry 4.0 landscape.

≡ COURSE OBJECTIVES

- Gain an understanding of the industry 4.0 philosophy and principles of change on the individual, team and organisation.
- Comprehend strategic and operational models in implementing Industry 4.0.
- Understand Business model innovation through Industry 4.0
- Understand and explore the new challenges behind Industry 4.0 and circular economy.
- Analyze the links between industry 4.0, circularity and sustainability
- Study how technology applications in Industry 4.0 will change industrial production
- Strategize how businesses in different industries can benefit from Industry 4.0 and circular economy, in line with their needs and opportunities.

≡ TACKLED CONCEPTS

- Introduction to Industry 4.0 & circular economy : from a vision to practical problems
- Smart manufacturing, smart factory, smart product
- Models and methodologies for Industry 4.0 & circular economy
- Digital Technologies for Industry 4.0 : IoT, AI, Digital twin, additive manufacturing, AR/VR, Blockchain
- Digital Ecosystem : institutional actors, editors, start-ups,
- The Servitization in Industry 4.0
- Professional Consulting Project with 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.

≡ **ASSIGNMENTS AND EXPECTED WORK**

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.

≡ **BIBLIOGRAPHY – COURSE MATERIAL**

- Sordan, J. E., Oprime, P., Pimenta, M. L., Chiabert, P., & Lombardi, F. (2022). Industry 4.0: A Bibliometric Analysis in the Perspective of Operations Management. *Operations and Supply Chain Management*, 15(1), 93–104.
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- Schneider P. (2018), “Managerial challenges of industry 4.0: an empirically backed research agenda for a nascent field”, *Rev Manage Sci*, 12 (3) (2018), pp. 803-848.
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≡ **EVALUATION METHODS**

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%

≡ **SESSIONS**

- **Session 1 & 2: Industry 4.0, circular economy & sustainability**
 - Introduction to Industry 4.0 & circular economy : from a vision to practical problems
 - Challenges of Operating in the Digital World
 - Operations in the 4th Industrial Revolution
- **Session 3 & 4 : Smart manufacturing, smart factory, smart product**
 - Why Companies are reinventing themselves ?
 - Cyber-physical production systems principles & challenges
 - Industry 4.0 Strategy and Implementation : Benefits and Challenges
 - Industrial Internet of Things characteristics and principles
- **Session 5 : Industry 4.0, New Challenges for Digital Transformation**
 - Digital Transformation & Industry 4.0 : Why, How & What ?
 - Digital Transformation of Manufacturing in the 4th Industrial Revolution
 - Digital Platforms, Digital Twin, Digital Ecosystems
 - Main Pitfalls of Industry 4.0 and How to Avoid them
 -

- **Session 6: Circular Business Models**
 - Business sustainability in circular economy : how to create economic and social value
 - Circular Design, Innovation and Assessment
- **Session 7 & 8 : Industry 4.0 and Corporate social responsibility (CSR)**
 - Meaning of sustainability and its impact on modern organisations
 - Why Organizations need CSR within Industry 4.0?
 - New business models for sustainability
- **Session 9 & 10 : Company experience with Industry 4.0 projects from different industries**
- **Session 11 & 12: Students presentations.**

CODE: Tbc

Course title: ARTIFICIAL INTELLIGENCE: COMPETING IN THE AGE OF AI

Term: FALL

Teaching hours: 24 hours

Number of credits: 3

Teaching language: ☒English ☐French

Course leader: Tbc

Speakers: Tbc

≡ 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 in different industries and business departments, from both process and system perspectives, as well as issues and opportunities in innovating through technology.

≡ COURSE OBJECTIVES

In this course, we'll learn about more advanced machine learning methods that are used to tackle problems in the supply chain. Upon completion of this course, participants will be able to:

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

≡ TACKLED CONCEPTS

- Artificial Intelligence
- Machine Learning, Deep Learning, Reinforcement learning
- AI project : PoC approach, testing environment, deployment phase
- AI strategy & project
- Ethics & AI

≡ 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 AI concepts, principles and practices in use in the organization and its environment. Each session is designed to explore practical issues in the

use of AI technologies to influence or implement corporate and competitive strategy of an enterprise. In order to gain maximum benefit from the 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.

≡ **ASSIGNMENTS AND EXPECTED WORK**

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.

≡ **BIBLIOGRAPHY – COURSE MATERIAL**

- 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
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≡ **EVALUATION METHODS**

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%

≡ **SESSIONS**

○ **SESSION 1:**

- LECTURE: 02h00
- Introduction AI : Demystifying AI in the digital age
- AI and Digital Transformation
- AI pillars, challenges and strategies
- AI impacts in Business and Industries
- AI Project Critical Success Factors
- AI Bias & Ethics

- **SESSION 2:**
 - LECTURE: 02h00
 - Machine Learning:
 - Supervised, Unsupervised and Reinforcement Learning
 - Deep Learning
 - AI platforms & eco-system
- **SESSION 3:**
 - LECTURE: 02h00
 - AI application in different industries
 - How can AI be used in operations (supply chain, logistics & procurement and production) ?
 - Using AI-based solutions in Sales & Marketing
 - Using AI-based solutions in Finance & HR
 - What is the future of AI in supply chain?
- **SESSION 4, 5 & 6:**
 - LECTURE: 06h00
 - IT Project vs. AI Project
 - PoC vs. PoV
 - How to start an AI project
 - Industrialization of an AI project
 - Data-driven approach in AI projects
 - Quiz
- **SESSION 7 & 8: / LECTURE: 04h00**
 - IBM experience about AI
 - Groups students work : case study and value proposition
 - Debrief and concrete examples of large-scale industrial implementation
- **SESSION 9 & 10:**
 - LECTURE: 04h00
 - Silex Sourcing Platform and AI
 - How AI is used by Silex Clients
 - Silex : AI Project preparation and Implementation
 - REX
- **SESSION 11 & 12:**
 - LECTURE: 04h00
 - Articles & case studies presentations: Company experience with AI projects

CODE: Tbc
Course title: BIG DATA ANALYTICS

Term: FALL

Teaching hours: 24 hours
Number of credits: 3
Teaching language: ☒English ☐French
Course leader: (Filled in by Program)
Speakers: Michel Bayer

≡ COURSE DESCRIPTION

Everything is driven by data and it is transforming business, social interactions, and the future of our society.

The computerization of every aspect of social and economic activity and the explosion of data the resulted in creation of large volumes of mostly 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 analyze them, and extract business and socially relevant information. The key objective of this course are:

- Understand the basic concepts & components of Big Data & BI
- Understand the architecture and the network in any Big Data strategy.
- Explain the role of Big Data and in improving organizational performance.

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.

≡ COURSE OBJECTIVES

The aim is to understand the digital disruption, to analyze how digital transformation is impacting industries and business models. Upon completion of this course, participants will be able to:

- Clarify and precise basic concepts of Digital disruption, Digital Economy, Digital Transformation
- Understand the concepts of Digital Transformation vs Organizational Transformation and apply them to business processes
- Define main pillars and blocks Digital Transformation Strategy
- Explore the role digital technologies have in obtaining a strategic competitive advantage.
- Analyze Digital Technologies use in back-office and front office of organizations (IA, Big Data, Blockchain and Cloud Computing) and explore their role in obtaining a strategic competitive advantage.
- Change Management for Digital Transformation : Human Capital & Digital Talent Gap
- Understand the organizational, behavioral, and political issues surrounding digital transformation in organization.

≡ TACKLED CONCEPTS

- Big Data
- Business Intelligence
- Data warehouse and Data mining,

- Data visualization
- Data Lake,
- Cognitive analytics

≡ **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.

≡ **ASSIGNMENTS AND EXPECTED WORK**

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.

≡ **EVALUATION METHODS**

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%

≡ **SESSIONS**

- **Session 1 & 2: Introduction Big Data & Analytics**
 - Big Data: Paradigm Shift
 - What is Big Data and why it matters: Definition, taxonomy and value for the enterprise
 - How is Big Data Used in Practice? Using Big Data in Businesses
 - From BI to Big Data Analytics?
 - What is a difference between BI & Big data ?
 - Data Warehouse & Data mining
- **Session 3 & 4 : Big Data Projects**
 - Big Data strategy, People & actors
 - Big Data Ecosystem & Solutions (Hadoop, MongoDB, MapReduce)
 - Big Data Architecture, technics and tools
 - Big Data application in different industries
 - Warehouse & datamining : Type of Storage & impacts on organization & business

- **Session 5 & 6 : Cognitive Analytics for Transformation**
 - Big Data & Advanced Analytics (Predictive & Prescriptive)
 - Cognitive Technologies, What is Watson ?
 - Blockchain & Big Data
 - Case studies of Watson
- **Session 6, 7 & 8: Big Data Visualization**
 - Python & Big Data
 - Data Analytics and Visualization : tools and approaches
 - Business Analytics to Support Decision Making
 - Software Tableau training
- **Session 9 & 10 : Ethics, Information Security and Privacy in Big Data environment**
- **Session 11 & 12 : Articles & case studies presentations : Company experience with Big Data projects from different industries**

CODE: Tbc

Course title: THE BLOCKCHAIN PATHWAY

Term: FALL

Teaching hours: 24 hours

Number of credits: 3

Teaching language: ☒English ☐French

Course leader: (Filled in by Program)

Speakers:

≡ COURSE DESCRIPTION

Blockchain technology is a game-changer for different industries. It has many potential advantages. It enables companies to increase efficiency (e.g. process automation, reduced paperwork, etc.), transparency and traceability, while also making different processes more secure as the origin and authenticity of products is known, proven and shared. Blockchain makes global organizations more efficient and they are looking for ways to leverage this technology to reinforce relationships and increase profits.

≡ COURSE OBJECTIVES

In this course, we'll learn about blockchain technologies that are used to tackle problems in different parts of the organization and its digital ecosystem. Upon completion of this course, participants will be able to:

- Understand the fundamentals of blockchain technology
- Understand why and how blockchain is used in organizations
- Explore real business use cases and applications of blockchain
- **Key areas where blockchain technology adds the most value.**
- Steps towards blockchain implementation project
- **Analyze leading technology players in blockchain**

≡ TACKLED CONCEPTS

- What is Blockchain and how to use it in Business
- Integration of Blockchain front & back office processes
- Benefits & Limitations of Blockchain in different industries
- Blockchain Technology Implementation : Steps Towards a Successful Blockchain Project Implementation
- Blockchain demo platforms

≡ 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 Blockchain concepts, principles and practices in use in the organization and its environment. Each session is designed to explore practical issues in the use of Blockchain 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.

≡ **ASSIGNMENTS AND EXPECTED WORK**

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.

≡ **BIBLIOGRAPHY – COURSE MATERIAL**

- Aslam, J., Saleem, A., Khan, N.T., Kim, Y.B., 2021. Factors influencing blockchain adoption in supply chain management practices: A study based on the oil industry. *J. Innov. Knowl.* 6, 124–134.
- Abbas, K., Afaq, M., Ahmed Khan, T., Song, W.-C., 2020. A Blockchain and Machine Learning-Based Drug Supply Chain Management and Recommendation System for Smart Pharmaceutical Industry. *Electronics* 9, 852.
- Queiroz, M. M., Telles, R., & Bonilla, S. H. (2019b). *Blockchain and supply chain management integration: A systematic review of the literature*. *Supply Chain Management: An International Journal*.
- Abidi, M.H., Alkhalefah, H., Umer, U., Mohammed, M.K., 2020. Blockchain-based secure information sharing for supply chain management: Optimization assisted data sanitization process. *Int. J. Intell. Syst.*
- Agrawal, T.K., Kumar, V., Pal, R., Wang, L., Chen, Y., 2021. Blockchain-based framework for supply chain traceability: A case example of textile and clothing industry. *Comput. Ind. Eng.* 154, 107130
- Al Barghuthi, N.B.N.B., Mohamed, H.J.H.J., Said, H.E.H.E., 2019. Blockchain in Supply Chain Trading. *ITT 2018—Inf. Technol. Trends Emerg. Technol. Artif. Intell.* 336–341.
- Azizi, N., Malekzadeh, H., Akhavan, P., Haass, O., Saremi, S., Mirjalili, S., 2021. IoT–Blockchain: Harnessing the Power of Internet of Thing and Blockchain for Smart Supply Chain. *Sensors* 21, 6048.

≡ **NECESSARY SOFTWARE – HARDWARE**

Waiting for more details that we will shared with you later.

≡ **EVALUATION METHODS**

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%

≡ **SESSIONS**

- **Session 1 & 2: Blockchain basics and principles**
 - Definition of blockchain, : the structure and operational aspects of blockchain
 - Why Organizations need Blockchain ? Role of Blockchain in achieving competitive advantage and operational efficiency
 - Challenges of Operating with Blockchain

- **Session 3 & 4 : Opening the Black Box of Cryptocurrency**
 - Introduction to Crypto and Cryptocurrencies
 - How Bitcoin Achieves Decentralization
 - Mechanics of Bitcoin : How does Bitcoin work? What makes Bitcoin different?
How secure are Bitcoins? How anonymous are Bitcoin users? Can cryptocurrencies be regulated? What might the future hold?
 - Bitcoin Mining & sustainability
- **Session 5 & 6:**
 - Blockchain strategy for industry and service companies
 - Technics and tools for developing blockchain
 - Application areas and use case examples
- **Session 7 & 8 :**
 - What is the transformative potential of Blockchain
 - What are the challenges to run Blockchain platform
 - Blockchain Ecosystem & Solutions
- **Session 9 & 10 :** Company experience with Blockchain projects from different industries (banking, maritime transportation, automotive)
- **Session 11 & 12:** Students presentations.

CODE: Tbc
Course title: DIGITAL BUSINESS MODELS
Term: FALL

Teaching hours: 24 hours
Number of credits: 3
Teaching language: ☒English ☐French
Course leader: Sébastien Ronteau
Speakers: Sébastien Ronteau

≡ 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

≡ TACKLED CONCEPTS

- Business models and digital business models
- Digital Platforms
- Digital Merchants
- Sharing Economy
- Freemium 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.

≡ ASSIGNMENTS AND EXPECTED WORK

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 – COURSE MATERIAL**

Although selective bibliography will be provided for each seminars, no text books are required for this course as most books gets out of date very quickly. The following books may however help students to understand some key concepts of Digital Business Models. Additional required and recommended reading materials will be provided before the course starts.

- Afuah, A., & Tucci, C. L. (2000). *Internet business models and strategies: Text and cases*. McGraw-Hill Higher Education.
- Amit, R., & Zott, C. (2001). Value creation in e-business. *Strategic management journal*, 22(6-7), 493-520.
- 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.
- Sundararajan, A. (2016). *The sharing economy. The End of Employment and the Rise of*.

≡ **EVALUATION METHODS**

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%

≡ **SESSIONS**

- **Session 1 : Introduction to digital businesses from a strategic point of view**
 - The focus of this session will be to familiarise students with the key characteristics behind digital business models:
 - key value drivers behind a digital business
 - key dimensions of a digital business model
 - Typologies of Digital businesses
- **Session 2 : Digital Platform Issues**
 - Assessing the economics/strategies/marketing of Digital Platforms - Economics behind Digital Platforms
 - Key drivers of Digital Platforms

- Dynamics of Value Networks
- Launching a Digital Platform?
- **Session 3 : Digital Merchants: resellers vs marketplaces**
 - Economics behind e-commerce
 - eretailers vs marketplaces
 - Danger zone: commoditization
 - New trends
- **Session 4 : Workshop on a Symbolic Case Study**
 - The idea is to collectively apply frameworks and concepts discussed so far on a symbolic case study.
 - Students will be trained and prepared to formalize strategic reports
- **Session 5 : Free-Based Business Models**
 - Typology of free-based BM
 - Economics behind freemium
 - Different strategies behind freemium BM Strategic
 - Marketing issues of freemium BM
- **Session 6 : Subscription-based Business Models**
 - Trends & Insights
 - Characteristics of Value Proposition
 - Characteristics of Value Architecture
 - Characteristics of Value Capture
 - SAAS Key Metrics
- **Session 7 : 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.
- **Session 8 : The sharing Economy: Disrupting in a Digital Landscape**
 - Basics of the Sharing Economy
 - Decrypting AIRBNB success
 - Issues and trends on disruption in a digital landscape
- **Session 9 : From Community-based BM to Social Networks BM**
 - Crowd vs Community
 - Should every Digital Business be social?
 - Social Networks Business Issues
 - Managing Digital Transformations
- **Session 10 : Analyzing the App Economy**
 - Challenging concepts on a final case study: the App Economy
- **Session 11 & 12: Articles & case studies presentations: Company experience with new digital business models from different industries**

CODE: Tbc

Course title: DIGITAL TECHNOLOGIES AND ECOSYSTEMS FUNDAMENTAL

Term: FALL

Teaching hours: 24 hours

Number of credits: 3

Teaching language: ☒English ☐French

Course leader: (Filled in by Program)

Speakers: Wendy Currie

≡ COURSE DESCRIPTION

This module aims to provide an overview of information systems 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.

This module is an opportunity for the participants to meet with key actors in the IS/IT business (software editors, integrators and solution architects).

This course will be jointly designed with experts from IT industry such as SAP, Oracle, IBM, AWS and new digital start-up)

≡ COURSE OBJECTIVES

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

- Evaluate how information systems can be used strategically by organizations
- Evaluate the impact of 'disruptive' technologies to businesses and organizations
- Consider how digital technology has changed work organization and jobs

≡ TACKLED CONCEPTS

- Information Systems fundamentals : Information Systems vs Information Technology
- Enterprise Systems technologies: The operational Backbone (ERP, CRM, SCM & Cloud Computing
- IoT : How Smart, Connected Products Are Transforming Companies
- New emergent technologies
- Partnership with Le Wagon – coding School / Opportunity to engage in webstore development (hackathon, coding, and mobile apps).

≡ 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.

≡ **ASSIGNMENTS AND EXPECTED WORK**

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.

≡ **EVALUATION METHODS**

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%

≡ **SESSIONS**

- **Session 1: Information Systems fundamentals : Information Systems vs Information Technology**
- **Session 2 & 3: Enterprise Systems technologies: ERP as an operational Backbone**
 - Why Enterprise Systems are the Operational Backbone for Digital Transformation?
 - Operational Excellence in the Digital Transformation Age.
 - Enterprise Systems Implementation strategies / Operations and Post-Implementation
 - The Future of Enterprise Systems in the New Digital World
 - Companies cases : SAP, Netsuite, Workday, Odoo
- **Session 4 & 5: CRM, SCRM and the personalization of the customer**
 - How CRM works in the context of sales, marketing, and customer service in modern businesses.
 - CRM and SCRM strategies and technologies
 - The Future of CRM Systems in the New Digital World
 - CRM Analytics
 - Introduction to CRM with HubSpot & Salesforce
- **Session 6 & 7: SCM and business transformation**
 - Managing flow of products and information in the Supply Chain
 - eCommerce Transformation and Omnichannel Revolution
 - SCM strategies and technologies : The role of Technology and its applications to Digital Supply Chains
 - Supply Chain Analytics : Pain Points and How Analytics May Relieve Them
 - Companies cases : UPS & DHL, Carrefour, Renault, Dell
- **Session 8 & 9: Cloud Computing**
 - Overview of Cloud Computing
 - Cloud Computing Technology & Providers
 - Cloud Computing Models

- Cloud Computing Transformation Strategy
- Emerging Cloud Computing approach: HybridMulticloud, Microservices, Serverless, Cloud Native, DevOps, Application Modernization
- **Session 10: IoT : How Smart, Connected Products Are Transforming Companies**
 - Introduction to IoT Fundamentals
 - IoT components, Architecture and protocols
 - Business and technical challenges of using IoT in Business
 - IoT security & Data Platform integration
 - Use-cases and Business Opportunities : Smart buildings and smart homes, Autonomous vehicles, smart grids, logistics and scm
- **Session 11 & 12: Articles & case studies presentations: Company experience with different digital technologies from different industries**

CODE: Tbc
Course title: CYBERSECURITY
Term: FALL

Teaching hours: 24 hours
Number of credits: 3
Teaching language: ☒English ☐French
Course leader: Tbc
Speakers: Emmanuelle Bernardin

≡ **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.

≡ **COURSE OBJECTIVES**

The aim is to understand cybersecurity, to analyze how it is influencing digitalization of industries and business models. 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.

≡ **TACKLED CONCEPTS**

- The principles of cybersecurity
- Cyber security for Digital Business
- Cyber security Strategy components
- Risk Management and IT security development
- Cybersecurity Policy, Governance, Law and Compliance
- Cybersecurity Architecture and Operations
- Practical, hands-on experience of real-world security analysis and problem solving.

≡ **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.

≡ **ASSIGNMENTS AND EXPECTED WORK**

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.

≡ **EVALUATION METHODS**

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%

≡ **SESSIONS**

- **Session 1 : Cybersecurity**
 - Why Cybersecurity is a key element of any digital business transformation ?
 - History of Cybersecurity
 - Current threats to organizations and individuals: Types and motives of cyber attacks
 - Key terminology, basic system concepts & essential components of Cyber security
- **Session 2 & 3: Cyber security for Digital Business**
 - Designing and implementing a Cybersceurity strategy : vision and operational components
 - Risk Management and IT security development
 - Cybersecurity within an organization : people, process and technology
 - Cybersecurity Use-cases in Business
- **Session 4 & 5: Cyber crime and Cyber law**
 - Cybersecurity Policy, Governance, Law and Compliance
 - Cybersecurity compliance and industry standards
 - Building a Culture of Cybersecurity
 - Cybersecurity Use-cases & examples
- **Session 6 & 7: Cybersecurity architecture and virtualization**
 - Network Security & Database Vulnerabilities
 - New digital technologies in cybersecurity (AI & ML, Blockchain, cryptography)
 - Cybersecurity Use-cases & examples
- **Session 8, 9 & 10: Main certificates in cybersecurity**
- **Session 11 & 12: Articles & case studies presentations + Company experience with Cybersecurity strategies from different industries**

CODE: Tbc

Course title: PROJECT MANAGEMENT IN THE AREA OF DIGITAL TRANSFORMATION

Term: SPRING

Teaching hours: 24 hours

Number of credits: 3

Teaching language: ☒ English ☐ French

Course leader: Tbc

Speakers:

≡ 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 (AI & Big Data algorithms, Blockchain), 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.

≡ TACKLED CONCEPTS

- Approaches to Project Management in the process of digital transformation
- IT Project vs. Digital Project (AI & Big Data)
- Governance in a Digital Project
- Data driven approach in digital projects: Data is King, Why?
- Agile approaches for digital projects ?
- How to start an AI project & The AI development cycle : PoC vs. PoV
- Industrialization of an AI project
- Project Management Fundamentals with practice of MS Project / Option: CAPM® or PMP® certification

≡ 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.

≡ **ASSIGNMENTS AND EXPECTED WORK**

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.

≡ **EVALUATION METHODS**

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%

≡ **SESSIONS**

- **Session 1 : Project Management Foundations in a digital world**
 - What's a Project and Project Management?
 - Why Do Projects Fail So Often? Why Does PM matter? Challenges of PM ?
 - History of PM
 - Project Strategy and Organization : project, program & portfolio
 - Project Management Use-cases & examples
- **Session 2 & 3: Project Management Lifecycle**
 - Project Initiation
 - Project Planning
 - Project Execution
 - Project Control
 - Project Closing
- **Session 4 & 5 : Project Management software (MS Project, Trello)**
- **Session 6 & 7 : Risks, Communication, Quality & Resource**
- **Session 8 & 9 : Agile Project Management**
- **Session 10, 11 & 12 : Digital Project Management**
 - Managing AI and Machine learning projects
 - PM for Big Data
 - PM for Blockchain

CODE: Tbc
Course title: DIGITAL CULTURE & PHILOSOPHY
Term: SPRING

Teaching hours: 24 hours
Number of credits: 3
Teaching language: ☒English ☐French
Course leader: (Filled in by Program)
Speakers:

≡ 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 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 model.
- Discuss and expand our understanding of how digital technologies and human values influence each other

≡ TACKLED CONCEPTS

- Ethical theories and philosophical approaches for DT transformation
- 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 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.

≡ **ASSIGNMENTS AND EXPECTED WORK**

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.

≡ **EVALUATION METHODS**

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%

≡ **SESSIONS**

- **Session 1 & 2 : Human Values Crisis in a Digitizing World**
- **Session 3 & 4 : Ethical theories and philosophical approaches for digital transformation**
- **Session 5 & 6 : Ethics and the dark side of algorithms**
- **Session 7 & 8 : Social and political philosophy: e-democracy, e-justice, e-freedom and**
- **Session 9 & 10 : Globalization and the digital divide**
- **Session 11 & 12: Working for a sustainable future : managing the double transformation digital and sustainable**

CODE: Tbc

Course title: CHANGE MANAGEMENT IN THE AGE OF DIGITAL

Term: SPRING

Teaching hours: 24 hours

Number of credits: 3

Teaching language: ☒English ☐French

Course leader: BANAHAAN Eoin

Speakers: BANAHAAN Eoin

≡ **COURSE DESCRIPTION**

With continuing developments in digital technologies, profound, disruptive change is taking place in the world of work. With this in mind, this course explores the challenges and key success factors in leading and managing organizational transformation and change in today's fast changing business environment.

Adopting an experiential approach, the course focuses on what the business leader/manager must "know and do" to manage change effectively at the level of the individual, the team and the organisation in an environment in which change is the only constant.

Students will acquire a suite of tools and techniques which are used by corporations in today's business world to implement change and prepare for the demand for continual transformation.

≡ **COURSE OBJECTIVES**

- Gain an understanding of the impact of change on the individual, team and organisation.
- Become familiar with leading contemporary operational models in implementing change.
- Acquire a suite of actionable tools and techniques to facilitate the design and implementation of transformation and change in a fast-changing business environment.

≡ **TACKLED CONCEPTS**

- Impact of transformation change in a fast-changing business environment on the individual, team and organization
- The Business Context - Key challenges and Key Success Factors
- Learning Styles and the Learning Cycle
- Frames of Reference as Frameworks for Understanding
- Change Leadership Drivers and Mind-sets
- Ambiguity and the Impact on Behaviour
- Change Team Performance
- Organisational Context and Models
- Strategic Change Leadership

≡ **LEARNING METHODS**

This course adopts an experiential approach based on the concept of double-loop learning. The assumption is that to be successful in a continually changing business environment, future business leaders/managers must have the ability to "learn how to learn". Students will explore state-of-the-art 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.

≡ **ASSIGNMENTS AND EXPECTED WORK**

The students will be required to read the case studies used during the course. Articles and book summaries will be distributed as appropriate.

≡ **BIBLIOGRAPHY – COURSE MATERIAL**

- 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, Boulton, J et al, Oxford University Press, 2015

≡ **EVALUATION METHODS**

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%

≡ **SESSIONS**

- **Session 1 & 2 : Introduction to Managing Change, theories and concepts**
 - The Challenge of Change : What is change management in a world of digital disruption?
 - Model of transformation and change: business world, organisational world and working world.
 - Learning Styles –Kolb's Learning Cycle : different ways in which people learn
 - The Power of Assumptions Model –frames of reference and the resulting conflicts
 - The 4 Value Orientations Model & the individual change leadership behaviour.
- **Session 3 & 4 : Disruptive Change –**
 - If change is a journey, what type of journey is it?
 - Re-imagining change within the disruptive world
 - Decision-Making in the Change Process : mastering complexity and plurality
 - Real-life case study : the Hauser Chemical Case Study
 - Workshop 1 – Ambiguity in a change management

- **Session 5 & 6 : High performance team**
 - The High-Performance Change Team
 - Change Team Profiles
 - Negotiation Skills and The Communication Challenge
 - Transformation and Change Project Planning –simulation focusing on the importance of planning and organizing in the transformation and change process.
- **Session 7 & 8 : Change Leadership Drivers and Mind-sets**
 - Change Leadership Styles
 - Leading Strategic Transformation and Change – The Kotter model
 - Change resistance : Resolving conflicts and negotiating agreements in the new world of work
 - Techniques and tools for analysing change in the organisational context such (PESTLE analysis, Lewin's change model, Organisational metaphors, The SCQA analysis tool, etc.
 - Workshop 2 – Performance – how the change leader can push the team to above average performance.
 - Real-life case study : The Caroline Plumier Case Study
 - Real-life case study : The Ken Vaughn Case Study (Managing Resistance)
- **Session 9 & 10 : Creativethinking**
 - The importance of stepping outside the box of conventional change management
 - Introduction to the Principles of Creativity : what creative thinking techniques and tools
 - Creative and critical thinking for solving problems
 - Applying design thinking to generate innovative ideas
- **Session 11 & 12 : Group work presentation and assessment.**
 - A Final Wrap-Up Simulation -Gathering different studies to build a knowledge base on change management

CODE: Tbc
Course title: DIGITAL AND THE FUTURE OF WORK
Term: SPRING

Teaching hours: 24 hours
Number of credits: 3
Teaching language: ☒English ☐French
Course leader: (Filled in by Program)
Speakers: Redouane EL Amrani

≡ COURSE DESCRIPTION

As organizations accelerate and expand their digital transformation initiatives, traditional work models simply aren't nimble enough, adaptive, nor scalable. The rapid advancement of new digital technologies is fundamentally changing the nature of work and increasing concerns about the future of jobs and organizations. **AI automation robots and cobots, Industry 4.0 started taking center stage in 'future of work' debates, and address a vast range of questions.** Meanwhile, this process is changing the types of skills and competencies needed in the workplace and demanded a shift in mindset among individuals, teams and organizations.

≡ COURSE OBJECTIVES

The aim of this course is to understand the digital disruption and analyze its impact on actual work models, culture and skills. Upon completion of this course, participants will be able to:

- Take a closer look at digital work transformation and explain how technological innovation can facilitate changes in working practices.
- Clarify and explain how the use of new digital tools and platforms is reinventing the workplace and impacting business and work processes
- Understand what the workforce will have to do differently in the new digital economy
- Explore and analyze how humans and machines collaborate to get work done (*augmentation*)
- Explore the new required skills in obtaining a strategic competitive advantage from the engaged digital transformation investment.
- Define the strategies to prepare the workforce for the future

≡ TACKLED CONCEPTS

- Digital Transformation, Digital Disruption & Digital Optimization
- Digital literacy & data literacy
- Work transformation: human and machine collaboration
- New digital talents, skills and competencies
- **Strategies for transforming work for a digital future**

≡ 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.

≡ **ASSIGNMENTS AND EXPECTED WORK**

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.

≡ **BIBLIOGRAPHY – COURSE MATERIAL**

- Fry, H. (2018). *Hello World: how to be human in the age of the machine*. Penguin.
- 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.
- Pein, C. (2018). *Live work work work die: a journey into the savage heart of Silicon Valley*. Scribe.
- Schwab, K. (2017). *The fourth industrial revolution*. London.
- Standage, T. (2013). *Writing on the wall: Social media – the first 2000 years*. Bloomsbury
- Stockwood, J. (2018). *Reboot: A blueprint for happy, human business in the digital age*. Virgin.
- Zuboff, S. (2019). *The age of surveillance capitalism*. Profile Books.

≡ **EVALUATION METHODS**

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%

≡ **SESSIONS**

- **Session 1 & 2 : Work transformation: human and machine collaboration**
 - Introduction to new digital technologies in work and business : Will machines be taking over our jobs?
 - Why new digital technologies are rapidly changing the fundamental nature of how we live and work?
 - AI & Blockchain as a technological revolution : Future scenarios of human-machine interaction.
 - Real-life case study
- **Session 3 & 4: New digital talents, skills and competencies**
 - What is the Future of Work?
 - Digital skills gap : challenges that employer and employees are facing
 - Skills For the Future Workplace : How can organisations address the digital skills gap?
 - Real-life case study

- **Session 5 & 6 : Strategies for transforming work for a digital future**
 - Strategies to develop effective human-machine relationships
 - Designing the Future of Work
 - What Can Humans do Better than Machines
 - Real-life case study
- **Session 7 & 8 : Digital literacy & data literacy**
 - The digital nature of work in business
 - Data as a strategic asset
 - Real-life case study
- **Session 9 & 10: The Role of Ethics in a Digital Society**
 - Ethical risks a data-driven organization faces
 - The Importance of Being Human in a World of Big Data, AI, and Automation
 - Design Diverse, Equitable, and Inclusive External Communication Strategies
 - Articles & case studies presentations
- **Session 11 & 12 : Group work presentation and assessment.**
 - A Final Wrap-Up Simulation -Gathering different studies to build a knowledge base on work transformation

CODE: Tbc
Course title: DATA FOR BUSINESS CHALLENGES
Term: SPRING

Teaching hours: 24 hours
Number of credits: 3
Teaching language: ☒English ☐French
Course leader: (Filled in by Program)
Speakers: Tbc

≡ COURSE DESCRIPTION

The aim is to reinforce the expertise of students in data science by working on up-to-date business cases using data from a company context. The other objective is to develop key skills to support and advise companies in their data journey.

≡ TACKLED CONCEPTS

- Data Engineering: using latest tools (Spark, Dataiku...) to build and deploy models
- Data Governance and Data quality
- Data Camp Projects,
- Database Management
- Statistics in Action

≡ 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.

≡ ASSIGNMENTS AND EXPECTED WORK

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.

≡ EVALUATION METHODS

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%

≡ **SESSIONS**

- **Session 1, 2 & 3 : Data Engineering : sing latest tools (Spark, Dataiku...) to build and deploy models**
- **Session 4,5 & 6 : Data Governance and Data quality and database management**
- **Session 7, 8 & 9 : Data Camp Projects,**
- **Session 10, 11 & 12: Statistics in Action**

ELECTIVES

Course title: TRANSITION SCENARIOS FOR CORPORATE CLIMATE ACTION

Teaching hours: 24 hours

Number of credits: 3

Teaching language: ☑English

COURSE DESCRIPTION

Many energy-related institutions and corporations have developed future scenarios to deal with the necessary transition of societies and economies: SBTi, Shift Project, RTE futurs énergétiques 2050, scenarios ADEME, scénario Negawatt 2022...

This course will approach the different European and French scenarios picturing an ecological and social transition aligned with the Paris agreement. What do these models tell us about our choice as societies? How feasible are they? Through this class, students will have a deep understanding of energy-related institutions and corporations, of the technical, economic and social impacts of climate change and how the main scenarios will impact societies and ways of living.

Course title: The art of communication : effective techniques for managers

Teaching hours: 24 hours

Number of credits: 3

Teaching language: ☑English

COURSE DESCRIPTION

Many energy-related institutions and corporations have developed future scenarios to deal with the necessary transition of societies and economies: SBTi, Shift Project, RTE futurs énergétiques 2050, scenarios ADEME, scénario Negawatt 2022...

This course will approach the different European and French scenarios picturing an ecological and social transition aligned with the Paris agreement. What do these models tell us about our choice as societies? How feasible are they? Through this class, students will have a deep understanding of energy-related institutions and corporations, of the technical, economic and social impacts of climate