FRONTIER TECHNOLOGIES ENABLING STRATEGIC CHANGE

International MBA IMBA-EN SEP-2024 S-STR

Area Information Systems and Technology

Number of sessions: 15

Term: Concentrations

Category: regular

Language: English

Professor: **CASIMIRO JUANES CALVO**

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Casimiro Juanes (Casi) is adjunct professor at IE Business school, where he has for more than 10 years delivered impactful programs on Digital Innovation and Transformation, cybersecurity and digital business models in executive MBA programs (IE-Brown, Global Executive, EMBA), IMBA, and Innovation programs. He has also delivered digital innovation and strategy courses in Executive programs for customers in diverse industries (banking, retail, automation, manufacture, oil and gas,..). In his role as Academic coordinator for EMBA and TechLab, he helps professors to deliver a great learning experience to students. He is currently Co-chair of the Digital Pathway Advisory Board at IE Business school.

Casi is an accomplished leader with expertise in digital innovation and transformation, IT technology and management, IT security, risk management, compliance, and IT audit, along with his expertise in learning. Currently, heis a freelance consultant for Boards and C-level teams in Digital Innovation, business transformation and Cybersecurity. Over his extensive course of more than 26 years career, Casi held numerous leading roles at Ericsson, along with extensive teaching and consulting engagements. In his time at Ericsson, he held director positions such as Head of IT MELA and EMEA, or Head of Cybersecurity for the group. He also drove business change in positions such as Digital Transformation Driver within Group IT, and in his last years he drove business change through people as Head of Learning and development of the unit Digital Services.

Office Hours

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Professor: **ÍÑIGO CAVESTANY DE VILLEGAS**

E-mail: icavestany@faculty.ie.edu

My goal is to contribute, collaborate, engage, and embrace open ecosystems that focus on improving the world as we know it. There will be value and exponential growth if we reinvent the why of business and life overall. I am passionate about business transformation driven by people, technology and innovation.

After five years of continuous growth at IBM, I have turned on the page to chase my dreams as an entrepreneur. I am the Cofounder of Second World.

The game studio by players, for players. My mission is to build an ecosystem that empowers players and turns them into owners and decision-makers, enabling them for the creator's economy.

As a proud IE Alumni, I contribute back to our academic institution as a professor and mentor in several academic programs and labs, mainly focusing on technology and entrepreneurship subjects. I play an active role in the open innovation ecosystem. It can be as an academic ambassador, supporting multiple initiatives at IE, as a partner advisor in several fast moving startups like Velca, Netspot, Poly.... or being part of innovation hubs like Call for Code, South Summit, Area 31, Barrabés, Founder Institute, Demium, Codenotch…

All in all, I am extremely fortunate to spend most of my time doing what I love.

Office Hours

Office hours will be on request. Please contact at:

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Professor: **KIRON RAVINDRAN**

E-mail: kravindran@faculty.ie.edu

I am a keen observer of innovation, information technology and industry. My doctoral studies were in the Economics of Information Systems, and with that I attempt to bring a unique perspective to the study of technology and innovation. My expertise spans digital transformation strategy, sourcing, IT governance, and and contracts. I care deeply about addressing practical aspects of innovation with the depth and seriousness of management science.

WIthin IE I holds the position of Senior Scholar and am the department chair of the Information Systems and Technology area.

Prior to moving to Spain, I have lived and worked in India, UAE, Oman, Italy, and the US.

You can find the information on my publications and articles I have curated in the following links

Academic Publications | Twitter | LinkedIn | Flipboard | Books I Like and Recommend

Office Hours

Office hours will be on request. Please contact at:

www.bit.ly/meetKiron (you may need to use an incognito window if you are signed on using a work or school single sign-on)

Please go ahead and book a slot here if you'd like to reach me for a synchronous meeting.

If you prefer to communicate via email I'm at kiron.ravindran@ie.edu

SUBJECT DESCRIPTION

“There is no alternative to digital transformation. Visionary companies will carve out new strategic options for themselves: those that don’t adapt, will fail.” Jeff Bezos, Amazon

Welcome to the transformative course, "Frontier Technologies for Strategic Change," where you will embark on a journey to gain a comprehensive understanding of the groundbreaking technologies shaping the future. This course goes beyond the surface, delving into the core principles and applications of key frontier technologies, including AI, Quantum Computing, AR/VR, Metaverse, Blockchain, and Web 3.0. Through insightful exploration, you will identify the potential impact of these technologies on diverse industries, unraveling their implications for organizational strategies.

In this dynamic learning environment, you will not only recognize strategic opportunities but also learn to critically assess the profound implications of frontier technologies. As you navigate the evolving landscape, you will evaluate the strategic implications on organizational processes, business models, and competitive landscapes. The course equips you with the skills to synthesize insights from different technologies and approaches, seamlessly integrating cybersecurity and neuroscience into your strategic toolkit. By fostering a deep understanding of these technologies, you will develop the ability to formulate comprehensive and integrated organizational strategies, or propose strategic scenarios and options, along with the rest of the courses from this Strategy and Transformation pathway.

Furthermore, strategic thinking takes center stage as you learn to align technological advancements with organizational goals, considering both short-term imperatives and long-term visions. The course takes advantage of your learnings in prior Innovation in a digital world, and Digital Transformation. Thus, it continues enhancing your knowledge on applied technology, and places a strong emphasis on leadership skills, recognizing the pivotal role of adaptive leaders in guiding organizations through the intricacies of change within the context of rapidly evolving frontier technologies. Be prepared to challenge your perspectives, engage in critical analyses, and emerge with the knowledge and skills needed to drive strategic change in the digital era.

LEARNING OBJECTIVES

- To develop a Comprehensive Understanding of Frontier Technologies that will strategically transform companies in next years.
- To identify the core principles, applications, and potential impact of these technologies on various industries and organizational strategies.
- To identify and evaluate strategic opportunities presented by these technologies for innovation, efficiency, and market positioning.
- To critically assess the strategic implications of frontier technologies on organizational processes, business models, and competitive landscapes.
- To develop the ability to synthesize insights from different frontier technologies and capabilities (cybersecurity, neuroscience) to formulate comprehensive and integrated organizational strategies.
- To apply strategic thinking to align technological advancements with organizational goals,

considering both short-term and long-term perspectives.

- to raise awareness about the social impact of technology and how it can enable a more diverse, inclusive and connected society.
- To realize the needed leadership skills required to navigate organizational change in the context of rapidly evolving frontier technologies, addressing ethical, diversity and inclusion topics, along with the right governance and business decision making

TEACHING METHODOLOGY

IE University teaching method is defined by its collaborative, active, and applied nature. Students actively participate in the whole process to build their knowledge and sharpen their skills. Professor's main role is to lead and guide students to achieve the learning objectives of the course. This is done by engaging in a diverse range of teaching techniques and different types of learning activities such as the following:

Learning Activity	Weighting
Lectures	25.0 %
Discussions	25.0 %
Exercises in class, Asynchronous sessions, Field Work	25.0 %
Group work	25.0 %
TOTAL	100.0 %

AI POLICY

Specific use cases of GenAI are encouraged

Generative artificial intelligence (GenAI) tools may be used in this course for use cases such as: research, ideation, proofreading, grammar check, image generation,... with appropriate acknowledgement. GenAI may not be used for assignments, group submissions, exams. If a student is found to have used AI-generated content inappropriately, it will be considered academic misconduct, and the student might fail the respective assignment or the course.

If you are in doubt as to whether you are using GenAI tools appropriately in this course, I encourage you to discuss your situation with me.

Below, a suggested format to acknowledge the use of generative AI tools.

Please note that acknowledging AI will not impact your grade.

I acknowledge the use of [AI systems link] to [specify how you used generative AI]. The prompts used include [list of prompts]. The output of these prompts was used to [explain how you used the outputs in your work]

If AI was permitted to use in your assignment, but you have chosen not to include any AI generated content, the following disclosure is recommended:

No content generated by AI technologies has been used in this assignment.

PROGRAM

SESSION 1 (LIVE IN-PERSON)

Sustainability Topics:

- Environment
- Governance
- Social Challenge
- Economic Development

INTRODUCTION TO FRONTIER TECHNOLOGIES AND HOW TO INCLUDE IN OUR STRATEGIC OPTIONS

In this first session, we will description of the course, its flow and cadence, the needed work and how to take full advantage of the course.

We will discuss the different technologies that might drive strategic change, and which ones are already doing it now. This session will also serve as a recap of key aspects to use, including key Digital Technologies not included but to be taken into account (data analytics, big data, IoT, platforms,…).

We will also review key models to use in the course: 3 horizons (its opportunities and challenges), the power of 3Es - ENVISION, ENGINEER, EXECUTE, and others.

Article: Gartner top 10 strategic technology trends 2024 (Gartner)

Article: Accenture. Technology Vision 2024 (Accenture)

Article: MIT top breakthrough technologies 2024 (MIT Technology Review)

POST CLASS:

Each group will have to select an industry they will focus on for strategic change and future options thanks to the use of frontier technologies.

MODULE 1: STRATEGIC TECHNOLOGIES

Explore these frontier technologies and discover how they can push for strategic change

SESSION 2 (LIVE IN-PERSON)

Sustainability Topics:

- Social Challenge
- Economic Development

THE NEW FRONTIER OF AI (I)

- Discover what AI and Generative AI is and how it operates.
- Explore real-world examples showcasing its practical applications.
- Engage in open discussions to evaluate the technology's pros and cons.
- Consider its potential to disrupt existing workflows and offer strategic competitive advantages.

Article: What's the future of AI (McKinsey) (Optional)

Article: Large language models, explained with a minimum of math and jargon (UnderstandingAI.org) (Optional)

Article: Gen AI, all your questions answered (Fast Company) (Optional)

Multimedia Material: Coursera: GenAI for Everyone (Coursera) (Optional)

SESSION 3 (LIVE IN-PERSON)

Sustainability Topics:

- Social Challenge

PREWORK

All groups to propose 2-3 future looking strategic use cases via email.

GENERATIVE AI, AGENTIC AI... YOUR STRATEGIC CHANGE

Participate in hands-on group discussions to explore the collaborative dynamics of implementing this technology.

- Brainstorm and discuss how the technology can disrupt established norms, fostering a creative and forward-thinking environment.
- Generate innovative use cases through collaborative efforts, showcasing the diverse applications and potential of the technology.
- Delve into discussions on how this transformative technology can drive industry-wide changes, emphasizing its role in catalyzing broader transformations.

SESSION 4 (LIVE IN-PERSON)

Sustainability Topics:

- Governance
- Social Challenge
- Economic Development

BUILDING DIGITAL TRUST: DLT, BLOCKCHAIN AND SMART CONTRACTS

- Discover Distributed Ledger technology, how this impacts digital trust, and what it has to do with Blockchain and Smart Contracts
- Explore real-world examples showcasing its practical applications.
- Engage in open discussions to evaluate the technology's pros and cons.
- Consider its potential to disrupt existing workflows and offer strategic competitive advantages.

Article: McKinsey: What is Blockchain (McKinsey)

Multimedia Material: Simply Explained: How does a Blockchain work (Youtube)

SESSION 5 (LIVE IN-PERSON)

BUILDING DIGITAL TRUST: BLOCKHAIN AND WEB 3 - YOUR STRATEGIC CHANGE

- Discuss the opportunity of Web 3

Participate in hands-on group workshops to explore the collaborative dynamics of implementing Blockchain and web 3

- Brainstorm and discuss how the technology can disrupt established norms, fostering a creative and forward-thinking environment.
- Generate innovative use cases through collaborative efforts, showcasing the diverse applications and potential of the technology.
- Delve into discussions on how this transformative technology can drive industry-wide changes, emphasizing its role in catalyzing broader transformations.

SESSION 6 (LIVE IN-PERSON)

Sustainability Topics:

- Social Challenge
- Economic Development

PRE-WORK

All teams to come with 2-3 proposals in their industry where AR/VR can build a strategic advantage

CUSTOMER AND EMPLOYEE EXPERIENCE: AR, VR

- Discover AR, VR, and other key technologies that transform Customer and employee Experience through immersive opportunities, what they are and how thety operate.
- Explore real-world examples showcasing its practical applications.
- Engage in open discussions to evaluate the technology's pros and cons.
- Consider its potential to disrupt existing workflows and offer strategic competitive advantages.

SESSION 7 (LIVE IN-PERSON)

CUSTOMER AND EMPLOYEE EXPERIENCE: Inmersive Realities towards METAVERSE

- Discover how inmersive realities and Metaverses transform Customer and employee Experience, what they are and how thety operate.
- Explore real-world examples showcasing its practical applications.
- Engage in open discussions to evaluate the technology's pros and cons.
- Consider its potential to disrupt existing workflows and offer strategic competitive advantages.

SESSION 8 (LIVE IN-PERSON)

PROF: KIRON (with a guest speaker)

NEUROTECH

- Discover what Quantum Computing is and how it operates. (obs, MORE BASIC THAN previous)
- Explore real-world examples showcasing its practical applications.
- Engage in open discussions to evaluate the technology's pros and cons.
- Consider its potential to disrupt existing workflows and offer strategic competitive advantages.

Here are some basic resources for you to learn some basics:

- How does a Quantum Computer work (video by Scientific American) or simple Quantum Computer explained (by NTT Research) to understand the basics.
- Quantum computing explained for 5 different age groups (Wired video presented by Talia Gershon, from IBM research) which talks about basics from very basic to undergrad level.
- What is Quantum Computing: reading and examples from IBM and McKinsey explainer. These come with potential business use cases.
- McKinsey Quantum Technology Monitor April 2024, available in McKinsey Quantum info.

SESSION 9 (LIVE IN-PERSON)

Sustainability Topics:

- Environment
- Governance
- Social Challenge
- Economic Development

PROF: Kiron with guest speaker

NEUROTECH

Participate in hands-on group workshops to explore the collaborative dynamics of implementing this technology.

- Brainstorm and discuss how the technology can disrupt established norms, fostering a creative and forward-thinking environment.
- Generate innovative use cases through collaborative efforts, showcasing the diverse applications and potential of the technology.
- Delve into discussions on how this transformative technology can drive industry-wide changes, emphasizing its role in catalyzing broader transformations.

SESSION 10 (LIVE IN-PERSON)

Sustainability Topics:

- Governance
- Social Challenge
- Economic Development

BUILDING CYBER RESILIENCE: UNDERSTANDING THE CONTEXT

- Understand the need for cybersecurity and cyber-resilience.
- Include Security in your strategic options and decisions, minimizing its risk and maximizing its opportunity

SESSION 11 (LIVE IN-PERSON)

BUILDING CYBER RESILIENCE - YOUR STRATEGIC CHANGE

- Realize the needed technologies required, along with processes and people to have a good cybersecurity posture

Participate in hands-on group workshops to explore the collaborative dynamics of implementing this technology.

- Brainstorm and discuss how the this capability needs to be included in your strategy
- Delve into discussions on how this transformative technology can drive industry-wide changes, emphasizing its role in catalyzing broader transformations.

SESSION 12 (LIVE IN-PERSON)

Sustainability Topics:

- Social Challenge
- Economic Development

Prof: KIRON with a guest speaker

QUANTUM

- Understand what Neurotech is and how it is being used today
- How to take full advantage of neurotech and brain capabilities (and biases) in your workforce
- Address how can Neurotech help you in your value proposition and approach to customers.

SESSION 13 (LIVE IN-PERSON)

Prof: KIRON with a guest speaker

PRE-WORK:

Each group to discuss in group works 2-3 examples of Neurotech in their selected industry.

QUANTUM

Participate in hands-on group workshops to explore the collaborative dynamics of implementing this capability.

- Discuss potential use cases
- Brainstorm and discuss how the capability can disrupt established norms, fostering a creative and forward-thinking environment.
- Realize the technologies behind that can take full advantage of Neurotech.
- Generate innovative use cases through collaborative efforts, showcasing the diverse applications and potential of the capability.
- Delve into discussions on how this transformative technology can drive industry-wide changes, emphasizing its role in catalyzing broader transformations.

SESSION 14 (LIVE IN-PERSON)

PROF: Kiron with guest speaker

NANOTECHNOLOGY

In this session Nanotechnology will be covered.

SESSION 15 (LIVE IN-PERSON)

YOUR FINAL PROPOSALS

Building strategic options, addressing strategic change through these frontier technologies and key strategic capabilities.

Presentation to a panel of experts

EVALUATION CRITERIA

Individual participation in class through your questions, comments, challenge of status quo, etc. a Personal Journal with your comments on each session is included as well for your reflection.

Individual Report - exercise: application of one of these technologies or capabilities in your selected company or industry. In order to create a change we will use Amazon + others template covering 4-6 pages for new product introduction as the template. [to be explained in session 1, information available at Blackboard]

Group delivery: will consist in group deliveries [10% of the grade], along with 1 final Presentation [30% of the grade]. Instructions can be found at Blackboard.

criteria	percentage	Learning Objectives	Comments
Group Presentation	40 %		
Individual work	30 %		
Class Participation	30 %		

FAILING GRADE AND REASSESSMENT

When students receive a Fail in a course, they have the opportunity to present themselves for reassessment in order to earn the necessary credits toward graduation.

The reassessment of students should be scheduled between 5 and 10 working days after the review session takes place.

Grades for the reassessment are limited to a Low Pass and Fail.

Both, the initial Fail as well as the grade of the reassessment remain on the transcript. For the purpose of calculating the GPA however, only the grade of the reassessment is to be considered. Students receiving a failing grade in the reassessment of a course will not be able to continue in the program.

BEHAVIOR RULES

Please, check the University's Code of Conduct here. The Program Director may provide further indications.

ATTENDANCE POLICY

Please, check the University's Attendance Policy here. The Program Director may provide further indications.

ETHICAL POLICY

Please, check the University's Ethics Code here. The Program Director may provide further indications.