COURSE OUTLINE

Course Code: BSN3701
Course Title: Technological Innovation
Semester: Semester 1, Academic Year 2025-26
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COURSE OVERVIEW

This course aims to equip students with a solid conceptual foundation to understand the dynamic process of technological innovation. Students will be introduced to the importance of technological innovation as a driver for value creation and economic growth. The dynamics of technological change will be analysed through concepts such as technology life-cycles, dominant design, network externalities, and first-mover advantage. Students will be exposed to the challenges in technological innovation, including formulating innovation strategy, coordinating collaboration, protecting innovation, and managing teams.

This course has its foundations in theory and research but is practice-oriented. This means that students will uncover challenges in technological innovation through case studies of real world companies that seek to build strong market positions for their innovations; firms with successful (and unsuccessful) technology strategies; companies that must formulate strategy in rapidly changing and highly uncertain market contexts; and enterprises whose market positions are challenged by external technological developments.

The course develops frameworks for analysing strategic issues faced by firms in technology-intensive industries. The focus in the course will always be on strategic issues rather than on descriptions of complex technologies. Students are not required to have a technical background to take this course. However, given the emphasis on the case method, students need to prepare to discuss and debate in class.

Who should take this course?

This course is designed for undergraduate students, to be taken as part of the Minor in Technopreneurship program offered by the NUS Business School. There are no formal prerequisites for this course.

COURSE MATERIALS

The course requires a fair amount of reading and reflection in between classes. You can find the reading materials assigned to each lesson in the schedule below. There is no required textbook for the course.

I expect you to read the assigned materials before each class. During class time, we will focus on discussions, analysis, and exercises.

ASSESSMENT

Attendance: 10%
Class participation: 30%
Group Project: 45%
- *Group Topical Presentation: 15%*
- *Final Group Presentation: 30%*

Individual Report: 15%

Attendance (10%):
Missing class will affect your grade and more importantly your own and your classmates' experience in the class. Attendance will be recorded every week after the first class. Absences will only be excused for valid reasons such as being certified medically unfit by a doctor, experiencing a death in the immediate family, or being involved in a serious accident. If you are absent for a valid reason, please email me and your class TA and provide documentary evidence.

Failure to attend class will result in a zero class participation score for that class.

Class Participation (30%):
This is a case-based course. To be prepared for class, you must read and think about assignments in advance of class. Evaluation of your participation will be based on your ability to contribute comments that are insightful, relevant and progressive (i.e., comments that add on to what is being said and move the discussion forward, rather than restate what has already been said). Comments should be thoughtful and constructive. I will be looking for quality in your participation and you will not need significant "airtime" to earn a high participation grade (if you put forth a single, key insight and that is all you contribute to a session, you will receive the maximum class participation grade for that session).

To aid you in preparing for class discussion, I will distribute key questions for each case that will foreshadow the direction of the in-class discussions. Please come to every class prepared to discuss the case at hand. ***Expect to be cold called.***

Group Work (45%)

In groups of *at least* 4, conduct research and deliver two presentations: (1) a topical presentation (15%) exploring a cutting-edge technological innovation and its potential impact; and (2) an in-depth company analysis (30%) examining a firm's technology strategy and market positioning.

Topical Presentation (15%)

This assignment aims to develop your ability to analyze emerging technological innovations and their potential impact on society, industries, or specific sectors. You will gain experience in researching, synthesizing, and presenting information in a clear, concise, and engaging manner.

Each group will deliver a **15-minute** presentation on a technological innovation from a list of pre-approved topics. Analyze its potential impact and implications, including how it could change the way we live and work. Given the time constraint, students should prioritize the most impactful aspects of their chosen technology. Here's a suggested structure:

1. **Hook (1 minute)**: Start with a compelling hook – a surprising statistic, a provocative question, or a real-world example – to grab the audience's attention and introduce the technology.

2. **What is it? (3 minutes)**: Provide a clear and concise explanation of the technology, focusing on its core functionality and purpose. Use visuals to enhance understanding.

3. **Why it Matters (5 minutes)**: This is the core of the presentation. Explain the potential impact and implications of the technology. Focus on how it could change specific aspects of our lives, work, or society. Use real-world examples or case studies to illustrate these points.

4. **Challenges and Opportunities (4 minutes):** Briefly touch upon the potential downsides, ethical considerations, or challenges associated with the technology. Balance this with a discussion of the opportunities it presents for innovation, economic growth, or societal improvement.

5. **Conclusion (2 minutes):** Summarize the key takeaways and end with a thought-provoking question, a call to action, or a vision for the future.

Company Assessment (30%)*:*

In your group, perform an in-depth analysis of a company's technology strategy and the positioning of its products or services. I highly recommend that you establish a contact at the company and spend some time interviewing company personnel, although field interviews are not strictly required to complete the assignment. All groups are expected to present the results of their research to the class.

Your presentation should describe the firm's technology strategy and the key strategic issues that face the organisation. Although not all of the following issues will be relevant to the situation you choose to analyse, you should identify and evaluate: the competitors of your firm, the stage of development of its industry, potential changes in the industry created by technological or market changes, sources of innovation for the industry and firm you are analysing, your target's intellectual property position, its key competencies, the stage of development of its products, its financial situation (access to capital, capital structure), the technical and managerial staffing issues that it faces, and the characteristics and strengths of its alliance portfolio. Through your analysis, you draw conclusions about the attractiveness and sustainability of your company's position and the industry segment that it occupies. If it helps, you can assume that you are either presenting to potential investors in the firm, or presenting an external review of its current technology strategy to the firm's board.

The project should offer critical evaluation and it should draw heavily on the theoretical readings and frameworks that are covered in the class.

Suggestions for Making Effective Presentations

Making effective presentations is an essential life skill. Quality presentations should be insightful, focused, fun, and within the time limit. A few suggestions include:

1) Practise and rehearse your presentation in advance. This will make a big difference.
2) Refrain from reading off your notes or slides. Try to speak to the audience.
3) Be efficient, get to the key points quickly and clearly and stay within the time limit.

Final - Individual Assignment (15%):

Reflect on your learning journey throughout this course, paying particular attention to how your understanding of key concepts evolved as a result of the in-class lectures, discussions and/or group presentations.

a. Identify three specific instances where your understanding of a concept or topic evolved or changed significantly.
b. Describe what triggered these shifts in your understanding, focusing specifically on how the in-class discussions contributed to these changes. Refer to specific points made by your classmates or the instructor.
c. Critically assess your own strengths and weaknesses as a learner in this context, and discuss how you can apply what you've learned about yourself (and the value of in-class discussion) to future learning experiences.

Your reflection should be approximately 1,000 words. Write in *prose*; I expect an essay. Articulate the main points clearly using topic sentences and make sure the writing and argumentation flows logically.

CLASS ADMINISTRATION

Ground Rules

- Please display your ***name card***. If you forget your name card, please make a temporary name card for that session
- Please silence your cell-phone before each course session
- We have a **no personal device screen policy** for the class (i.e., no phones or laptops). As the class is mostly case-based, we ask that you be respectful to your fellow students during case discussions

Missed Class Sessions

As noted above, attendance will be recorded every week after the first class and absences will only be excused for valid reasons. If you are absent, please email me and the TA before class and provide documentary evidence by the subsequent class.

Assignments

Please note that ***LATE SUBMISSIONS WILL NOT BE GRADED*** and that ***SEVERE PENALTIES EXIST FOR PLAGIARISM***. If you have any questions regarding these policies please ask me in advance of potential issues. I will be available during the course, appointments, and via email.

Academic Honesty & Plagiarism

Academic integrity and honesty is essential for the pursuit and acquisition of knowledge. The University and School expect every student to uphold academic integrity & honesty at all times. Academic dishonesty is any misrepresentation with the intent to deceive, or failure to acknowledge the source, or falsification of information, or inaccuracy of statements, or cheating at examinations/tests, or inappropriate use of resources.

Plagiarism is 'the practice of taking someone else's work or ideas and passing them off as one's own' (The New Oxford Dictionary of English). The University and School will not condone plagiarism. Students should adopt this rule – You have the obligation to make clear to the assessor which is your own work, and which is the work of others. Otherwise, your assessor is entitled to assume that everything being presented for assessment is being presented as entirely your own work. This is a minimum standard. In case of any doubts, please consult me.

Additional guidance is available at:

- http://www.nus.edu.sg/registrar/administrative-policies-procedures/acceptance-record#NUSCodeofStudentConduct
- http://nus.edu.sg/osa/resources/code-of-student-conduct

COURSE SCHEDULE *(subject to change)*

Week 1: 15 Aug 2025	**Course Overview and Introduction**
Case	EMI and the CT Scanner (A), Bartlett C. A., *HBS Case Series*
Suggested Readings	C.Christensen, M.Raynor, and R.McDonald "What is Disruptive Innovation?", *Harvard Business Review 90, no. 12 (2015): 44-53* J.Gans, "The Other Disruption", *Harvard Business Review 94, no. 3 (2016): 78-85*
Case Questions	After reading the (A) case, think about these questions: 1. What predictions can you make about industry and competitive developments as of 1972? 2. Should EMI enter the CT scanner business? Why or why not? 3. How attractive is this business? 4. Who will make the money in CT scanners and why?
Week 2: 22 Aug 2025	**Organisation in Innovation**
Case	EMI and the CT Scanner (B), Bartlett C. A., *HBS Case Series*
Suggested Readings	Staw B.M., "Why No One Really Wants Creativity", Creative Action in Organizations Abernathy & Utterback, "Patterns of Industrial Innovation," Technology Review
Case Questions	After reading the (B) case, think about these questions: 1. How was EMI doing in the CT business in 1976? 2. How do you assess the company's performance to date? 3. What should Powell do at the conclusion of the case?
Due	***Submit your project teams - Minimum groups of 4***
Week 3: 29 Aug 2025	**Work on Topical Presentations**
Week 4: 5 Sep 2025	**Profiting from Technology: Protecting Innovation**
Case	The LEGO Group: Publish or Protect? HBS Case Series
Suggested Readings	Teece, D. J. "Profiting from technological innovation: Implications for integration, collaboration, licensing and public policy," *Research Policy* Besen & Raskind, "An Introduction to the Law and Economics of Intellectual Property," *Journal of Economic Perspectives* These three YouTube videos will provide useful background for the case: ***Introduction to the Patent System***: https://www.youtube.com/watch?v=vZ1SBP8ul1s ***Plastic Injection Molding***: https://www.youtube.com/watch?v=RMjtmsr3CqA ***Shaping the future of die and moulds: EOS tooling applications***: https://www.youtube.com/watch?v=zqWOrwBzOjU

Case Questions	1. How much know-how should LEGO Group share with its tool suppliers? How practical is it in reality to prevent spillovers? 2. How much of LEGO Groups' process innovations are actually detectable? In other words, when looking at the product, do you think you would be able to see how they made it? 3. What is your recommendation about what to do about how they should drive their moulding platform and protect it?
Week 5: 12 Sep 2025	**Crossing the Chasm - Simulation**
Case	Innovation Marketing Simulation: Crossing the Chasm, Michael Eckhardt; Mark Cavender; Geoffrey Moore; Tripat Gill, *HBS Case Series*
Suggested Readings	D.Baker, David and C.Said, "How the Bay Area took over the Self-Driving Car Business", *San Francisco Chronicle, July 2017* T.Keeney, "Mobility-As-A-Service: Why Self-Driving Cars Could Change Everything," *ARK Invest Report, Research White Paper, October 2017* R.Lanctot, "Accelerating the Future: The Economic Impact of the Emerging Passenger Economy", *Strategy Analytics Report, June 2017*
Case Questions	You will be playing a simulation about self-driving technology. You will assume the role as an entrepreneur/manager in charge of launching and commercialising this new technology in the market.
Week 6: 19 Sep 2025	**Dealing with Disruptive Change in the Cloud**
Case	General Management Simulation: CloudStrat, Managing Migration to the Cloud, Mohanbir Sawhney; Michael Bean, Kellogg School of Management
Suggested Readings	Intro to Cloud Strat (video) CloudStrat: Managing Migration to the Cloud
Case Questions	1. You will assume the role as the Chief Strategy Officer of Legasoft, the global market leader in the Enterprise Resource Planning (ERP) software industry. You will be allowed to play two practice runs before the actual evaluated gameplay. More instructions will be given closer to date.
Reading Week	
Week 7: 3 Oct 2025	**Exam Week, No Class, Group Work**
Week 8: 10 Oct 2025	**Topical Presentations**
Week 9: 17 Oct 2025	**Reinvention in the face of Technology**
Case	The Reinvention of Kodak, Ryan L. Raffaelli; Christine Snively, *HBS Case Series*
Suggested Readings	Melissa A. Schilling, "Chapter 5: Timing of Entry" in *Strategic Management of Technological Innovation, 5th ed.* Cohen and Levinthal, Absorptive Capacity, A New Perspective, *Administrative Science Quarterly*

Case Questions	On 3 September 2021, Kodak announced it had emerged from Chapter 11 bankruptcy. Six months later, Kodak's board announced that former Silicon Valley executive Jeff Clarke would become the company's next CEO and charged him with leading one of the most complex corporate turnarounds in recent history. Consider the following questions as you review the case: 1. How did Kodak go from being a giant in the film industry to facing bankruptcy? 2. What are the leadership challenges facing Clarke as he attempts to bring Kodak out of bankruptcy? 3. What trade-offs does Clarke face? Be specific. 4. What is the biggest mistake he could make as Kodak's newly appointed CEO?
Week 10: 24 Oct 2025	**Final Project Presentations - Part 1** *Note: Order of group presentations will be chosen randomly*
Week 11: 31 Oct 2025	**Final Project Presentations - Part 2** *Note: Order of group presentations will be chosen randomly*
Week 12: 7 Nov 2025	**Final Project Presentations - Part 3** *Note: Order of group presentations will be chosen randomly*
Week 13: 14 Nov 2025	**Course Wrap-Up and Review** **Final Individual Written Report due on 14 Nov 2025 at 5p.m**