Emerging Information Technologies and Business Innovation

ITIS 5414A

Date: Nov. 4, to Dec. 9, 2019

Time: 8:35 – 11:25 a.m.

Instructor: Rebecca Parke, CPA, CMA, PMP
Office: n/a
Phone: n/a
Email: rebecca.parke@carleton.ca
Office Hours: I am available after class and other times by appointment.

Course calendar description from 2019/2020 graduate calendar:

Examines the emerging information technology trends and how new technologies can be incorporated to drive process innovation and improve operational performance.

Course Description:

Emerging Information Technologies have transformed the landscape of business and organizations significantly over the last several decades. Along with the technology, Innovation has been essential to developing useful and marketable applications.

Most businesses utilize these technologies either as consumers and/or as part of their product and service offerings. It is important that not just the Chief Information Officers (CIO's) and technology staff understand their potential but that individuals involved in the strategic decision-making process do as well. They should have a strong understanding of the technologies and how they could potentially be leveraged in order to contribute to the discussion and decision making process.

This course aims to provide you with a good business understanding of the leading emerging technologies out there, an appreciation of how business and consumers will typically adopt and the ability to identify considerations and consequences of adoption.

The course does not examine in detail how the technologies work or are created but will focus on their potential impact.

The course will include readings, course lectures and discussions. Student participation in weekly discussions is key.

Learning Objectives:

1) Develop a deeper understanding of the leading emerging information technologies and their potential impact on individuals and organizations
2) Understand the importance of innovation and how emerging technologies may be applied to support innovation in delivering a business's products and services.
3) Be able to identify and examine considerations and consequences to individuals, businesses and society.

Course Prerequisites:

Prerequisite(s): ITIS 5401, or ITIS 5403 for students in the International Development Management Concentration.

Textbook(s):

The Future of Work: Robots, AI, and Automation
Darrell M. West
Brookings Institution Press
ISBN: 978-0-8157-3293-8

Diffusion of Innovations, 5th Edition
Everett M. Rogers
Free Press
ISBN: 0-7432-2209-1

Listed below are required readings for each week. There will be typically two chapters and 2-4 articles each week to be completed before the lecture.

Both textbooks are available in the bookstore for purchase. In addition, one copy has been placed on reserve at the library. Readings are available electronically via cuLearn (look on the course page, under Library Reserves where you will find links in Ares.)

Exam date:

There is no exam for this course.

Drop Course Policy:

The deadline for academic withdrawal is the last day of classes (each term).

Grading Scheme:

Class Participation	20%
Emerging Information Technologies Presentation (group work)	15%
Business Innovation & Adoption Presentation (group work)	15%
Critical Analysis (individual)	20%
Emerging Information Technologies Paper (individual)	30%
TOTAL	**100%**

All grades are individual except for the two presentations where a grade will be assigned for the team/group.

Class Participation:

Participation by students in class discussions and activities is an important part of this course. Effective participation is possible only by regular class attendance and pre-class preparation. You should read the required readings before coming to class. You will not gain participation marks simply by asking an obligatory question or two or providing an experience-based comment. You need to understand the basis for classroom discussions provided by the reading material to effectively participate. The instructor will keep track of each student's attendance and participation and will assess how such participation contributes to the discussion following each class.

It is essential that when attending class you are fully present. Technical devices are to only be used in class to assist in learning activities. They are not to be used to check social media accounts, catch up on other course work or generally any activity not associated with the class that you are to be participating in. Such activities will affect your participation mark.

Presentations:

Students will work in teams of two or three (assigned by the professor) to present twice in this course to the larger class. The intent of these team presentations is to explore and share information on additional emerging information technologies not being focused on within the course and second is to better understand what it takes, from examples, for organizations and end users to adopt these technologies.

The first presentation will be on Emerging Information Technologies and will occur on week 2 to 4. The second presentation will be on Business Innovation and Adoption and will occur on week 4 to 6.

During the first class, the instructor will randomly assign students to teams for both assignments and identify the date that they will present. Scheduling will be considered to ensure teams are not presenting both topics on the third week.

The first week the teams will choose an emerging information technology they are interested in from the class discussion that week to be the topic of their first presentation. By the second class the Business Innovation and Adoption teams must have identified the organization (business, industry etc.) they will focus on for their presentation and provide the details to the instructor.

Each presentation should be 15 minutes in length with 5 minutes of discussion time allotted at the end. Based on class size we will have approx. 10 teams resulting in 4 presentations a week. They will be interspersed with the instructor covered material each week. In addition, they will be marked by your peers.

Develop a PowerPoint (or similar) presentation to guide the presentation. Submit the presentation to the instructor before the start of class. Videos and other media may be used but avoid using them for most of your presentation time or taking away from discussion time.

<u>Presentation #1 – Emerging Information Technologies</u>

- Identify an emerging information technology to focus on.
- Educate the class on what the technology is, a brief history and why it is of interest to your team.
- Next identify key industries that have already adopted the technology, those that are prime to do so and any challenges and/or consequences to society that exist or you can anticipate.
- Finally, include the class members in some way. Ask a provoking question, leave them with a pondering thought etc.

<u>Presentation # 2 – Business Innovation and Adoption</u>

- Identify a business, industry, government or non-government entity to focus on.
- Educate the class on the entity and why it was of interest to your team.
- Next identify key information technologies that have or could possibly be transformational for this entity and explain why you think so. Note: you can go high-level with numerous technologies so we can get a good overview of say the last 20 plus years, or you can focus in on a shorter historical duration and go more detailed on the

technology.

- In addition, identify any challenges and/or consequences that exist, or you can anticipate.
- Again, include the class members in some way. Ask a provoking question, leave them with a pondering thought etc.

Critical Analysis:

Each student must submit a Critical Analysis. The student will select one of the required readings for that week as well as at least one additional paper of the student's own choosing. This additional paper may contrast the view or support the view of the original paper. Using the two or more papers, the student will provide an integrated summary and analysis of the main issues discussed in the papers. Each critical analysis should be 4-5 pages long, double spaced (1,000 to 1,250 words). Referenced articles should be properly cited.

A critical analysis is an evaluation not just a summary of the articles. You should express your **personal point of view.** After reading your paper, the reader should understand the authors' main points and whether the articles contribute to our understanding of Emerging Information Technologies and Business Innovation from both the research and practical perspective. A critical analysis does not mean that you find fault with the articles but rather that you determine for yourself whether the arguments the authors make are supported, consistent and relevant.

The critical analysis will be graded primarily for content; however, they should be professionally formatted, presented and the proper use of English is required.

The critical analysis assignments are due at the latest by 8:35 am. (just before class) on the week where the article that you have chosen will be discussed. The Critical Analysis can be submitted any week of the course but are due at the latest at the beginning of the class that the topic is being discussed.

Emerging Technology Paper:

The final assignment is an Emerging Technology Paper. It is an 8-10 (2,000 to 2,500 word) double spaced paged, essay exploring an emerging information technology and identifying examples, issues of innovation and business adoption of the technology. The student will identify an emerging information technology (e.g. AI, AR, etc.) and an application area (e.g. business, government or non-government organizations or industries), that they wish to focus on.

The emerging technology or its application does not need to be one discussed in class. It should also not be the one that your critical analysis was written on. The paper should discuss the

potential of the technology to drive business innovation, the pros and cons of using such a technology and the realities faced by the organization that adopts this emerging technology.

The essay should discuss the potential of the technology to drive change, pros, cons and consequences of using such a technology and should consider the realities faced by the organization that adopts such technologies. The essay should not be purely descriptive. It should critically analyze the issue or application being covered and provide insights and implications for further study on these topics.

Students can leverage material discussed in class and are expected to use 5 – 10 sources of their own. Students may also draw on their own experiences as well as external sources such as interviews with subject matter experts or industry leaders to provide perspective and context.

The paper should be appropriately referenced and properly formatted. If you wish you may submit the intended topic for your paper and a draft outline to the instructor before the third week of class. The instructor will provide feedback to help with the development of the paper. This will not be marked.

The Emerging Technology Paper is due by Monday December 16th at noon.

Rubrics will be posted on cuLearn for all assignments to provide clarity on expectations and marking approach.

All assignments are to be submitted electronically, in a non-PDF format, via CuLearn. Alternatively, if there are issues with CuLearn submit via email.

Missed assignments and deferred examination:

It is very important that you attend and participate in weekly lectures. If you are unable to attend, please let your instructor know as soon as possible that you will be absent.

Contribution to the team in preparing and presenting is part of your evaluation. If you are scheduled to present on a week you know you will not be able to attend, please trade with another group and inform the instructor as-soon-as possible of the change. If you find you have a conflict after the presentation dates have been confirmed, contact your instructor ASAP to make alternate arrangements.

Presentations and Critical Analysis papers will not be accepted after the start of class for which they apply. The Emerging Information Technology paper will be accepted past the due date but with a penalty of 10% per day to a maximum of five days. After the fifth day the assignment will receive a zero.

Course Schedule:

Week	Date	Topic/Agenda	Pre-class Prep
1	November 4th	**Course Outline** **Introduction: Emerging Information Technologies & Innovation** • What is meant by Emerging Technologies? • What technologies are currently considered Emerging? **Innovation** – a foundation • Elements of Diffusion Theory	Readings: 1. Rogers, Everett M. (2003) Diffusion of Innovation, 5th Edition, Chapter 1 – Elements of Diffusion 2. Deloitte, (2019) Tech Trends, Executive Summary 3. Gartner, Hype Cycle for Emerging Technologies 2018 & 2019
2	November 11th	**Emerging Technologies** • Emerging Technology #1 - Robotics **Innovation** • How do businesses innovate? • The Innovation-Development Process **Presentations:** Groups 1 – 4 Emerging Technologies	Readings: 1. West, Darrell M., (2018) The Future of Work: Robotics, AI and Automation, Chapter 1 – Robotics 2. Rogers, Everett M. (2003), Diffusion of Innovation, 5th Edition, Chapter 4 – The Generation of Innovations 3. Guy Hoffman (2018), interviewed by Frieda Klotz, Building a Robotic Colleague with Personality, MIT Sloan Review, February 6, 2018

			4. Christina Larson (2018), Closing the Factory Doors: For two centuries, countries have used low-wage labor to climb out of poverty. What will happen when robots take those jobs?, Foreign Policy, Issue 229, July 1, 2018 5. Keith Kirkpatrick (2013), Legal Issues with Robots, Communications of the ACM, November 2013, Vol. 56 No. 11, Pages 17-19
3	November 18th	**Emerging Technologies** • Emerging Technology #2 – Artificial Intelligence **Innovation** • How do individuals decide whether to adopt or reject innovations? **Presentations:** Groups 5 - 8 Emerging Technologies **Emerging Technologies Paper Outline (optional)** - submit before this class the intended topic of your paper and a draft outline for review. Instructor will provide feedback.	Readings: 1. Rogers, Everett M. (2003) Diffusion of Innovation, 5th Edition, Chapter 5 – The Innovation Decision Process 2. West, Darrell M., (2018) The Future of Work: Robotics, AI and Automation, Chapter 2 – Artificial Intelligence 3. Howard, Ayanna (2019), The Regulation of AI — Should Organizations Be Worried?, MIT Sloan Management Review – July 29, 2019 4. Zoran Latinovic and Sharmila C. Chatterjee (2019), How AI Is Helping Companies Break Silos, MIT Sloan Management Review - Sept. 24, 2019

			5. Fountaine, Tim, McCarthy, Brian, Saleh, Tamim (2019), Building the AI-Powered Organization. Harvard Business Review, 00178012, Jul/Aug2019, Vol. 97, Issue 4
4	November 25th	**Emerging Technologies** • Emerging Technology #3 – The Internet of Things **Innovation** • How do businesses decide whether to adopt or reject innovations? **Presentations:** Groups 9 & 10 Emerging Technologies, Groups 1 & 2 Business Innovation and Adoption	**Readings:** 1. Rogers, Everett M. (2003) Diffusion of Innovation, 5th Edition, Chapter 10 – Innovation in Organizations 2. West, Darrell M., (2018) The Future of Work: Robotics, AI and Automation, Chapter 3 – The Internet of Things 3. Francine Berman, Vinton G. Cerf (2017), Social and Ethical Behavior in the Internet of Things, By Communications of the ACM, February 2017, Vol. 60 No. 2, Pages 6-7 4. Vlad, Krotov (2017), The Internet of Things and new business opportunities, Business Horizons, Volume 60, Issue 6, November–December 2017, Pages 831-841 5. Corcoran, Terence (2019), 5G: The internet of global chaos, .National Post; Don Mills, Ont. 30 Jan 2019: FP.11.

			6. Reguly, Eric, (2017), Too clever for comfort: As the smart devices of the Internet of Things invade your home, hackers, hucksters and Big Brother are close behind, Report on Business Magazine (Apr 2017): P.21

5	December 2nd	**Emerging Technologies**
		• Emerging Technology # 4 – Block Chain
		
		Innovations
		• What are the consequences that result from the adoption of an innovation?
		  ○ Rethinking Work
		  ○ Continuous Learning
		
		Presentations: Groups 3-6 Business Innovation and Adoption
			Readings:
			1. Rogers, Everett M. (2003) Diffusion of Innovation, 5th Edition, Chapter 11 – Consequences of Innovations
			
			2. West, Darrell M., (2018) The Future of Work: Robotics, AI and Automation, Chapter 4 – Rethinking Work and Chapter 6 – Lifetime Learning
			
			3. Don Tapscott and Alex Tapscott (2017), How Blockchain Will Change Organizations, MIT Sloan Management Review – Winter 2017 Edition
			
			4. Joy Macknight (2019), The Libra Dream: Will it become reality? The Banker, October 1, 2019, Edition 1, National Edition
			
			5. Johnny Cheung, Group general counselBC Group, Hong Kong (2019), Opinion: Why cryptocurrencies should be universally adopted. International Financial Law Review, 02626969, 7/8/2019

6	December 9th	**Emerging Technologies** • Emerging Technology – Others of Interest - TBD **Innovations** • Case Studies **Presentations:** Groups 7 – 10 Business Innovation and Adoption	Deloitte, (2019), AI-fueled organizations, Reaching AI's full potential in the enterprise, 16 January 2019 Deloitte, (2019), Intelligent interfaces, Reimagining the way humans, machines, and data interact, 16 January 2019, TBD
	December 16th	**Final Essay Due by noon.**	

ADDITIONAL INFORMATION

Course Sharing Websites
Materials created for this course (including presentations and posted notes, labs, case studies, assignments and exams) remain the intellectual property of the author(s). They are intended for personal use and may not be reproduced or redistributed without prior written consent of the author(s).

Required calculator in BUSI course examinations
If you are purchasing a calculator, we recommend any one of the following options: Texas Instruments BA II Plus (including Pro Model), Hewlett Packard HP 12C (including Platinum model), Staples Financial Calculator, Sharp EL-738C & Hewlett Packard HP 10bII

Group work
The Sprott School of Business encourages group assignments in the school for several reasons. They provide you with opportunities to develop and enhance interpersonal, communication, leadership, follower-ship and other group skills. Group assignments are also good for learning integrative skills for putting together a complex task. Your professor may assign one or more group tasks/assignments/projects in this course. Before embarking on a specific problem as a group, it is your responsibility to ensure that the problem is meant to be a group assignment and not an individual one.

In accordance with the Carleton University Undergraduate Calendar (p 34), the letter grades assigned in this course will have the following percentage equivalents:

A+ = 90-100	B+ = 77-79	C+ = 67-69	D+ = 57-59
A = 85-89	B = 73-76	C = 63-66	D = 53-56
A - = 80-84	B - = 70-72	C - = 60-62	D - = 50-52
F = Below 50			

Grades entered by Registrar:
WDN = Withdrawn from the course
DEF = Deferred

Academic Regulations
University rules regarding registration, withdrawal, appealing marks, and most anything else you might need to know can be found on the university's website, here:
http://calendar.carleton.ca/undergrad/regulations/academicregulationsoftheuniversity/

Requests for Academic Accommodation
You may need special arrangements to meet your academic obligations during the term. For an accommodation request, the processes are as follows:

Pregnancy obligation
Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website: https://carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf

Religious obligation
Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website: https://carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf

Academic Accommodations for Students with Disabilities
If you have a documented disability requiring academic accommodations in this course, please contact the Paul Menton Centre for Students with Disabilities (PMC) at 613-520-6608 or pmc@carleton.ca for a formal evaluation or contact your PMC coordinator to send your instructor your Letter of Accommodation at the beginning of the term. You must also contact the PMC no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with your instructor as soon as possible to ensure accommodation arrangements are made. carleton.ca/pmc

Survivors of Sexual Violence
As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and is survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit: https://carleton.ca/sexual-violence-support/

Accommodation for Student Activities
Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf

For more information on academic accommodation, please contact the departmental administrator or visit: students.carleton.ca/course-outline

Academic Integrity
Violations of academic integrity are a serious academic offence. Violations of academic integrity – presenting another's ideas, arguments, words or images as your own, using unauthorized material, misrepresentation, fabricating or misrepresenting research data, unauthorized co-operation or collaboration or completing work for another student – weaken the quality of the degree and will not be tolerated. Penalties may include; a grade of Failure on the submitted work and/or course; academic probation; a refusal of permission to continue or to register in a specific degree program; suspension from full-time studies; suspension from all studies at Carleton; expulsion from Carleton, amongst others. Students are expected to familiarize themselves with and follow the Carleton University Student Academic Integrity Policy which is available, along with resources for compliance at: https://carleton.ca/registrar/academic-integrity/

Centre for Student Academic Support
The Centre for Student Academic Support (CSAS) is a centralized collection of learning support services designed to help students achieve their goals and improve their learning both inside and outside the classroom. CSAS offers academic assistance with course content, academic writing and skills development. Visit CSAS on the 4th floor of MacOdrum Library or online at: carleton.ca/csas

Important Information:
- Students must always retain a hard copy of all work that is submitted.
- All final grades are subject to the Dean's approval.
- For us to respond to your emails, we need to see your full name, CU ID, and the email must be written from your valid CARLETON address. Therefore, in order to respond to your inquiries, please send all email from your Carleton CMail account. If you do not have or have yet to activate this account, you may wish to do so by visiting http://carleton.ca/ccs/students/

Important dates and deadlines

https://sprott.carleton.ca/students/mba/dates-deadlines-policies/