



ITIS 5414 – Fall 2015
Emerging Information Technologies and Business Innovation
Tuesday, Nov. 3, 10, 17, 24, Dec. 1, 8, 2015.
DT701 - 6:05 – 8:55 p.m.

Instructor: Rebecca Parke
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Office Hours: After class and by appointment. Please email to arrange.

Course calendar entry from 2015/2016 graduate calendar:

ITIS 5414 [0.25 credit]

Emerging Information Technologies and Business Innovation

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

Course Description:

Almost all businesses utilize Information technology (IT) in some way, shape or form. In fact, the extent that hardware, software and internet services are utilized is growing significantly as both the types of technologies and availability increase. New technologies have the potential to disrupt business both from a positive and a negative perspective. They can bring additional benefits to an organization and/or introduce new risks.

This course will look at key emerging technology trends, what are the benefits and risks to organizations and ask how prepared are Canadian firms to leverage them.? The course does not examine how the technologies work or are created but will focus on their impact on business, old, new and emerging.

The course will include readings, course lectures and discussions. The instructor will lead the lectures for weeks 1 and 2, student groups will lead for weeks 3-6 inclusive. Student participation in weekly discussions is key.

Learning Objectives:

- 1) Understand what emerging IT is.
- 2) In particular, which ones are key disruptors.
- 3) What is the impact of these technologies on business? and
- 4) How prepared are Canadian Businesses? and
- 5) Provide examples of emerging IT and the impact on business

Course Restrictions:

Attendance is mandatory. The course content is heavily influenced by the class discussions and 4 of the 6 lectures will be student lead.

Course Prerequisites:

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

Textbook(s):

There is no textbook for this course.

Listed below are required readings for each week. There will be 4-6 articles each week (approx.. 50 - 60 pages total). The readings should be completed before the lecture.

Readings can be found on-line. Most of them are available via the Carleton library online. Links to publicly available documents are provided below.

Exam date:

There is no exam for this course. There will be a final paper instead (Emerging Technology Paper)

Drop Course Policy:

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

Grading Scheme:

Critical Analysis	20%
Lecture Leadership (group work)	20%
Contribution to Class Discussion	20%
Emerging Technology Paper	40%
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TOTAL	100%

All grades are individual with the exception of the lecture leadership where a grade will be assigned for the group.

Critical Analysis:

Each student must submit a Critical Analysis. 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. The student will select 2 of the required readings for that week as well as one additional paper of the student's own choosing. Using the three papers, the student will provide a brief critical analysis of the main issues discussed in the paper. Each critical analysis should be 4-5 double-spaced pages (1,000 to 1,250 words) long. Referenced articles should be properly cited. The critical analysis will be graded primarily for their content but they should be professionally formatted and presented.

A critical analysis is an evaluation not just a summary of the articles. After reading your critical analysis, the reader should understand the authors' main points and whether or not the articles contribute to our understanding of Emerging 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 yourself whether the arguments the authors make are supported, consistent and relevant.

The following reference may help you in your analysis.....

<http://carleton.ca/sasc/wp-content/uploads/criticalanalysis.pdf>

The critical analysis assignments are due at the latest by 6:00 p.m. (just before class) on the week where the articles that you have chosen will be discussed. Students may submit via email or by giving the instructor a printed copy.

Lecture Leaderships:

During the first class, the instructor will randomly assign students to groups and groups to topics/weeks. Groups of approx. 5-6 students will be assigned to work together to lead the lecture and discussion for the 3rd-6th weeks of the course.

In leading the lecture and discussions, students will....

- Review all required readings assigned for the day.
- Synthesize the most relevant theoretical and practical issues raised in the articles.
- Supplement the articles with any other relevant material (videos, cases etc.)
- Develop a PowerPoint (or similar) presentation to guide the lecture
- Submit the presentation via email or hard copy to the instructor before the start of class.
- Discuss the presentation with the instructor at least 4 days before the class presentation. This can be done by emailing an outline including timing and presenters or arrange a time to discuss.
- Lead the class through the lecture and discussion.

It is expected that the lecture leaders will develop ways to engage the class in an interactive dialog. Lectures are not one-way presentations. Facilitation of class discussion to ensure opportunities for participation is key.

The seminar leaders may take advantage of additional material but must cover all of the required readings for that week. Videos and other media may be used but avoid taking away from discussion time.

The members of the group may organize who does what in any manner they choose but the group is expected to conduct a coherent seminar where the various parts are related and where all group members participate.

Emerging Technology Paper:

The final assignment is an Emerging Technology Paper. It is a 10 – 12 (2,500 to 3,000 word) double spaced paged, essay exploring a particular emerging technology and identifying examples, issues of innovation and business adoption of the technology.

The student will identify a particular emerging technology (e.g. cloud computing, 3D printing) and the application area (e.g. business, government) that they wish to focus on. The emerging technology or application does not need to be one being 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 analyse the technology, business application and consider what the implications are for further

study of the technology. 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 6:00 p.m. Friday December 11th. It can be submitted by email or by giving the instructor a printed copy at the last class.

Preparation and participation:

Students are expected to prepare for each class by reading the required reading articles for that week. Students are expected to engage in the discussions in class. The learning objectives will be addressed through our interaction and discussion of the topic each week.

Students should come to class prepared to not only discuss the required reading articles but their insights and opinions formed of them. Student participation will be judged on the merit of the contribution to stimulating class discussion, problem-solving and analytical skill. Not on frequency. Students should always try to add value to the conversation and challenge the ideas of the article authors, classmates and the instructor in a constructive way.

Missed assignments:

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

Contribution to the group in preparing and leading the weekly lecture is part of your evaluation. Week one the groups will be made. If you are scheduled to lead the lecture for a week you know you will not be able to attend please make arrangements to trade with another student and inform the instructor of the change. If you find you have a conflict after that date please contact your instructor ASAP to make alternate arrangements.

Emerging Technology papers will be accepted past the due date but with penalty. If you find yourself in this position contact the instructor via email ASAP to discuss your particular situation.

Course Schedule:

Week/Date: Week 1 – November 3, 2015

Topic: Introduction, Emerging Information Technologies, How Prepared are Canadian Firms?

Class Prep: Read Assigned Material

Readings:

1. Deloitte Age of disruption, Are Canadian firms prepare?, Deloitte Future of Canada Series – pp 1-37
<http://www2.deloitte.com/content/dam/Deloitte/ca/Documents/insights-and-issues/ca-en-insights-issues-future-of-productivity-2015.pdf>
2. Deloitte (2015) Technology, Media & Telecommunications Predictions – pp 5-31
<http://www2.deloitte.com/content/dam/Deloitte/global/Documents/Technology-Media-Telecommunications/gx-tmt-pred15-full-report.pdf>

3. Conference Board of Canada, News Release 16-15NAT, Canada Moves Up in Innovation Rankings, But Weaknesses Remain.
http://www.conferenceboard.ca/press/newsrelease/15-09-03/canada_moves_up_in_innovation_rankings_but_weaknesses_remain.aspx
4. Innovation Indicators
<http://www.conferenceboard.ca/hcp/details/innovation.aspx>

Week/Date: Week 2 – November 10, 2015

Topic: Consumerization of Information Technology and the effect on business.

Class Prep: Read Assigned Material

Readings:

1. Harris, J., Ives, B., and Junglas, I. (2012) IT Consumerization: When Gadgets Turn Into Enterprise IT Tools, MIS Quarterly Executive, September 2012 (11:3), pp 99-112
2. Junglas, I., & Harris J. (2013) The promise of consumer technologies in emerging markets. Communications of the ACM, 56(5) 84-90. DOI:[10.1145/2447976.2447995](https://doi.org/10.1145/2447976.2447995)
3. [Aurélie Leclercq - Vandelannoitte](#), (2015) "Managing BYOD: how do organizations incorporate user-driven IT innovations?", Information Technology & People, Vol. 28 Iss: 1, pp.2 – 33 DOI: [10.1108/ITP-11-2012-0129](https://doi.org/10.1108/ITP-11-2012-0129)
4. "IT's Arab spring; Personal technology at work." *The Economist* 8 Oct. 2011: 11(US). *Academic OneFile*. Web. 12 Oct. 2015. <http://www.economist.com/node/21531112>

https://proxy.library.carleton.ca/http://go.galegroup.com/ps/i.do?id=GALE%7CA268890996&v=2.1&u=ocul_carleton&it=r&p=AONE&sw=w&asid=d1e070a3485b09651a8e2f3532ffe825

Week/Date: Week 3 – November 17, 2015

Topic: Applied Social Media

Class Prep: Read Assigned Material

Readings:

1. Kaplan, A.M., & Haenlein, M. (2010) Users of the world, unite! The challenges and opportunities of Social Media. Business Horizons, 53(1), 59-68. DOI: [10.1016/j.bushor.2009.09.003](https://doi.org/10.1016/j.bushor.2009.09.003)
2. Hanna, R., Rohm, A., and Crittenden, V.L. (2011) We are all connected: The power of the social media ecosystem, Business Horizons, 54, pp. 265-273 DOI: [10.1016/j.bushor.2011.01.007](https://doi.org/10.1016/j.bushor.2011.01.007)
3. John Qi Dong, Weigang Wu (2015) Business value of social media technologies: Evidence from online user innovation communities, Source Information June 2015, volume 24 (Issue2) pp.113-127 DOI:[10.1016/j.jsis.2015.04.003](https://doi.org/10.1016/j.jsis.2015.04.003)
4. Christensen, C. (2011) Discourses of Technology and Liberation: State Aid to Net Activists in an Era of "Twitter Revolutions" The Communication Review, Volume 14, Issue 3, pp. 233-253 DOI:[10.1080/10714421.2011.597263](https://doi.org/10.1080/10714421.2011.597263)

5. Culnan, McHugh and Zubillaga (2010) How large U.S. companies can use Twitter and other social media to gain business value, *MIS Quarterly Executive*, (9)4, pp 243-259

<http://web.a.ebscohost.com.proxy.library.carleton.ca/ehost/detail/detail?sid=acc0f258-8b8d-4c29-924c-961042bbddf%40sessionmgr4002&crhashurl=login.aspx%253fdirect%253dtrue%2526scope%253dsite%2526db%253dbth%2526AN%253d58657254%2526msid%253d-427756170&hid=4107&vid=0&bdata=JnNpdGU9ZWZwhvc3QtbGl2ZQ%3d%3d#db=bth&AN=58657254>

Week/Date: Week 4 – November 24, 2015

Topic: The Cloud

Class Prep: Read Assigned Material

Readings:

1. Mell & Grance (2010) The NIST Definition of Cloud Computing, *Communications of the ACM*, 53(6), pp. 1-7
<http://csrc.nist.gov/publications/nistpubs/800-145/SP800-145.pdf>
2. Armbrust et al. (2010) A view of cloud computing, *Communications of the ACM*, 53(4), pp. 50-58 DOI: [10.1145/1721654.1721672](https://doi.org/10.1145/1721654.1721672)
3. Buyya, Yeo, Venegopal, Broberg & Brandic (2009) Cloud computing and emerging IT platforms: Vision, hype and reality for delivery computing as the 5th utility, *Future Generation Computer Systems*, 25, pp. 599-616 DOI: [10.1016/j.future.2008.12.001](https://doi.org/10.1016/j.future.2008.12.001)
4. Brynjolfsson, Hofman & Jordan (2010) Cloud computing and electricity: Beyond the utility model, *Communications of the ACM*, 53(5), p. 32-34. DOI: [10.1145/1735223.1735234](https://doi.org/10.1145/1735223.1735234)
5. Greengard, S., (2010) Cloud computing and developing nations, *Communications of the ACM*, 53(5), p. 18-20. DOI: [10.1145/1735223.1735232](https://doi.org/10.1145/1735223.1735232)
6. Oredo, J.O., Njihia, J.M., Mindfulness and Quality of Innovation in Cloud Computing Adoption, *International Journal of Business and Management* 10.1 (2015): 144-160.
<http://search.proquest.com.proxy.library.carleton.ca/docview/1650543916/fulltext?accountid=9894>
7. Top 5 Reasons Why Cloud is Essential for Businesses, IBM Software Defined | Dec 18 2013
https://www.ibm.com/developerworks/community/blogs/ibmsysw/entry/top_5_reasons_why_cloud_is_essential_for_businesses?lang=en

Week/Date: Week 5 – December 1, 2015

Topic: 3D Printing

Class Prep: Read Assigned Material

Readings:

1. Petrick, Irene J., and Timothy W. Simpson. "3D printing disrupts manufacturing: how economies of one create new rules of competition: 3D printing may represent a disruption to the manufacturing industry as profound as the industrial revolution." *Research-Technology Management* Nov.-Dec. 2013: 12+. *Academic OneFile*. Web. 12 Oct. 2015. DOI: [10.5437/08950308X5000193](https://doi.org/10.5437/08950308X5000193)
2. Mellis (2014) Do-It-Yourself Fabrication of Electronic Devices, *IEEE Pervasive Computing* (13)3, p 22-29
DOI: [10.1109/MPRV.2014.45](https://doi.org/10.1109/MPRV.2014.45)

3. Ratto & Ree (2012) "Materializing Information D3 printing and social change" First Monday (Online), Volume 17, Number 7 (27 June 2012) <http://journals.uic.edu/ojs/index.php/fm/article/view/3968/3273>
4. Hart, B. (2012) Will 3D printing change the world? <http://www.forbes.com/sites/ciocentral/2012/12/07/manufacturing-the-future-10-trends-to-come-in-3d-printing/>
5. Srinivasan, V. and Bassan, J.(2012) Manufacturing The Future: 10 Trends To Come In 3D Printing, <http://www.forbes.com/sites/ciocentral/2012/12/07/manufacturing-the-future-10-trends-to-come-in-3d-printing/>
6. Mavri, M., Redesigning a Production Chain Based on 3D Printing Technology, Knowledge and Process Management, 07/2015, Volume 22, Issue 3, p.141-147 DOI: [10.1002/kpm.1466](https://doi.org/10.1002/kpm.1466)
7. Guillemot, Mironov & Nakamura (2010) Bioprinting is coming of age, International Conference on Bioprinting and Biofabrication, Biofabrication, 2, p. 107 DOI: [10.1088/1758-5082/2/1/010201](https://doi.org/10.1088/1758-5082/2/1/010201)
8. Anonymous (2012) A third industrial revolution, The Economist, April 21: 3-4. <http://www.economist.com/node/21552901>

Week/Date: Week 6 – December 8, 2015

Topic: Augmented Reality/Wearables

Class Prep: Read Assigned Material

Readings:

1. Berryman, D.R. (2012) Augmented Reality: A review, Medical Reference Services Quarterly, 31(2), pp. 212-218 DOI: [10.1080/02763869.2012.670604](https://doi.org/10.1080/02763869.2012.670604)
2. Roggen, D., Magnenat, S., Waibel, M., more....(2011) Wearable Computing IEEE Robotics & Automation Magazine, 2011, Volume 18, Issue 2 p. 83-95 DOI: [10.1109/MRA.2011.940992](https://doi.org/10.1109/MRA.2011.940992)
3. Lee, M., Lee, M. R. Beyond the Wearable Hype, IT Professional Magazine, 09/2015, Volume 17, Issue 5 pg. 59-61 http://journals1.scholarsportal.info.proxy.library.carleton.ca/details/15209202/v17i0005/59_btwh.xml
4. Roggen, D; Perez, DG; Fukumoto, M; more... (2014) ISWC 2013-Wearables Are Here to Stay by IEEE PERVASIVE COMPUTING, 01/2014, Volume 13, Issue 1 pg. 14-18 DOI: [10.1109/MPRV.2014.11](https://doi.org/10.1109/MPRV.2014.11)
5. Cirani, S., Picone, M. Wearable Computing for the Internet of Things IT Professional Magazine, 09/2015, Volume 17, Issue 5, p.35-41 doi: [10.1109/MITP.2015.89](https://doi.org/10.1109/MITP.2015.89)
6. Van Krevelen & Poelman (2010) A survey of Augmented Reality Technologies, Applications and Limitations, The International Journal of Virtual Reality, 2010, 9(2) pp 1-20 <http://kjcomps.6te.net/upload/paper1%20.pdf>

Important dates and deadlines

Critical Analysis – due before class on day lecture topic is being covered.

Seminar Leading

1st class – groups will be assigned

4 days before seminar date – discuss presentation with instructor or provide an outline including timing and presenters.

Day of Seminar – presentation is to be submitted prior to class.

Emerging Technologies Paper

Optional – topic and outline to instructor for feedback (no later than before class - 3rd week)

Paper - 6:00 p.m. Friday December 11th

Course Sharing Websites

Student or professor 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).

Policy on Mobile Devices

The use of mobile devices IS NOT PERMITTED in this class. It is disruptive to the instructor and class members. If you carry such a device to class, please make sure it is turned off. If an emergency situation requires you to keep it turned on, please discuss this with your instructor prior to class.

Group Work

The Spratt School of Business encourages group assignments in the school for several reasons. They provide you with opportunities to develop and enhance interpersonal, communication, leadership, followership and other group skills. Group assignments are also good for learning integrative skills for putting together a complex task. Your instructor 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.

Person with Disabilities

Students with disabilities requiring academic accommodations in this course are encouraged to contact a coordinator at the Paul Menton Centre for Students with Disabilities to complete the necessary letters of accommodation. After registering with the PMC, make an appointment to meet and discuss your needs with me at least two weeks prior to the first in-class test or ITV midterm exam. This is necessary in order to ensure sufficient time to make the necessary arrangements. Please refer to <http://www.carleton.ca/pmc/> for all PMC information.

Religious Observance

Students requesting academic accommodation on the basis of religious observance should make a formal, written request to their instructors for alternate dates and/or means of satisfying academic requirements. Such requests should be made during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist, but no later than two weeks before the compulsory academic event. Accommodation is to be worked out directly and on an individual basis between the student and the instructor(s) involved. Instructors will make accommodations in a way that avoids academic disadvantage to the student.

Students or instructors who have questions or want to confirm accommodation eligibility of a religious event or

practice may refer to the Equity Services website for a list of holy days and Carleton's Academic Accommodation policies, or may contact an Equity Services Advisor in the Equity Services Department for assistance.

Pregnancy

Pregnant students requiring academic accommodations are encouraged to contact an Equity Advisor in Equity Services to complete *a letter of accommodation*. The student must then make an appointment to discuss her needs with the instructor at least two weeks prior to the first academic event in which it is anticipated the accommodation will be required.

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, authorized co-operation or collaboration or completing work for another student – weaken the quality of the degree and will not be tolerated. Penalties may include expulsion; suspension from all studies at Carleton; suspension from full-time studies; a refusal of permission to continue or to register in a specific degree program; academic probation; and a grade of Failure in the course, 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: <http://www2.carleton.ca/sasc/advisingcentre/academic-integrity/>.