

## GBUS 845 AP - UNDERSTANDING CLOUD SERVICES

WINTER 2020, PROVISIONAL SYLLABUS

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### **INSTRUCTOR DETAILS:**

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Office Location: TBA  
Office Hours: By appointment

### **CLASS DETAILS:**

Class Dates: January 9 – April 9, 2020  
Class Times: Thursday 5:00 – 7:45 pm  
Class Location: ED514

### **COURSE DESCRIPTION**

This course will provide business school students with an intellectual framework for understanding the strategic significance of cloud services, a major development in the way business operates around the world. We will cover the history and development of cloud computing, the analytics that become possible when both individuals and objects are connected and tracked at scale, as well as the social, economic and geo-political consequences of big data for corporations, governments and other service providers. What does it mean to build and monitor a market through cloud-based data? This course requires students to read and participate in class discussion. No technical background is required.

### **LEARNING OBJECTIVES / OUTCOMES**

At the end of this course students will be able to

- narrate a basic history of business computing up to cloud services.
- grasp some of the technical innovations behind cloud services.
- participate in an informed discussion about the business model behind cloud services.
- understand the significance of cloud as an infrastructural transformation in how data and computational power are organized and distributed.
- deploy an informed framework of analysis for evaluating how cloud is reconfiguring market-driven operations across the global economy.

## **COURSE EXPECTATIONS**

The class is based on a weekly conversation about the assigned materials. Attendance is essential. Please come to class prepared. While some of the readings and videos we will review are historical, the problem we will be thinking about is only a decade old. This class is not about memorizing facts or mastering theories and models. You will be expected to actively participate in developing an informed framework for recognizing why cloud services are a strategically significant development and for identifying its political and economic consequences. You will take the point of view of leaders and managers who work in industries and institutions that must interact with the tech sector. To succeed in this course you will have to do an average of **four hours per week** of preparation outside of class time.

## **COURSE MATERIALS**

Written texts are available on UR Courses; documentary films will be available streaming. In the first half of the course we will be using a combination of historical, academic, and documentary pieces to unpack the business impact of cloud services. In the second half of the course we will examine a number of current events surrounding contemporary tech sector growth.

## **COURSE ASSESSMENT SUMMARY**

Attendance	15 %
Participation	20 %
Five one page exercises	50 %
Final report	15 %
<b>TOTAL</b>	<b>100%</b>

You will be given instructions for each of the five exercises one week before they are due. The exercises are designed to help you independently digest the course material as we move along.

You will also be given instructions for how to prepare your final report – an independent synthesis of the course materials. This course does not require a research paper.

For a description of the grading system, consult the Faculty of Graduate Studies and Research link here: <https://www.uregina.ca/gradstudies/current-students/grad-calendar/grading-system.html#gradingsystem>

## **DESCRIPTION OF ASSESSMENT**

You will be grade on a point-for-percentage basis. For example, you will receive up to 10 points on each of the five exercises, up to a total of 50 points.

Exercise A	due January 23	10%
Exercise B	due February 13	10%
Exercise C	due March 5	10%
Exercise D	due March 19	10%
Exercise E	due March 26	10%
Final report	due April 16	15%

The topics of the exercises are described in the body of the course outline, below.

## **ACADEMIC REGULATIONS**

All **exercises** will be accepted until the end of the semester with a one-point penalty for each week they are late. The exercises must be completed independently.

Extensions or requests for changes by students to the **final report** due date will require the student to complete a formal request for deferral. The student completes the request, consults with the instructor who must sign the form, and the instructor then submits the form (and any supporting documentation provided by the student) to Faculty of Graduate Studies and Research (FGSR). The decision (approved or denied deferral) is made by FGSR and is usually only approved if there are extenuating circumstances (e.g., illness, death, etc). The decision is sent by mail to the student and it is the student's responsibility to ensure the deferred requirements are met within the outlined time frame. It is also the student's responsibility to follow-up with FGSR if they do not receive a response from FGSR on their submitted request. Requests for deferral received more than two (2) weeks after the final day of the examination period will be denied. The deferral form can be found on the FGSR website at: <https://www.uregina.ca/gradstudies/forms.html>

Please note: recording or rebroadcasting our class conversations is not permitted.

## **STUDENT RESOURCES**

### **Accessibility Services**

If there is any learner who, because of a disability or other consideration, may have a need for accommodation(s), please contact the Centre for Student Accessibility before or at the start of the course <https://www.uregina.ca/student/accessibility/> . The Centre will advise how you proceed and the required communication with your instructor.

## Counseling Services

If any learner is experiencing personal problems which may be affecting their studies, please consider consulting UofR Consulting Services. For more information check here

<https://www.uregina.ca/student/counselling/services/index.html>

## Writing Assistance

The Student Success Centre ([www.uregina.ca/ssc](http://www.uregina.ca/ssc)) offers both on-line resources and in- person tutoring on writing skills.

## SCHEDULE

Date	Week	Topic	Notes
Jan 9	1	Introduction and overview	
Jan 16	2	Intellectual foundations: Information and control in the firm	<b>*Core readings</b>
Jan 23	3	What is your relationship to information technology?	<b>Exercise A Due</b>
Jan 30	4	Buying computational power	
Feb 6	5	From mainframes to personal computers	<b>Heavy viewing</b>
Feb 13	6	Imagining computing as infrastructure	<b>*Core readings Exercise B DUE</b>
<b>Feb 20 – BREAK</b>			
Feb 27	7	Big data, targeted advertising: the economics of the Internet	
Mar 5	8	Being agile, being lean	<b>Exercise C DUE</b>
Mar 12	9	The rise of the Big Five	
Mar 19	10	AI and optimization	<b>Exercise D DUE</b>
Mar 26	11	System security	<b>Exercise E DUE</b>
Apr 2	12	Energy consumption	
Apr 9	13	Course Review	<b>*Attendance advised</b>
<b>Apr 16 – DUE FINAL REPORT</b>			

## **COURSE OUTLINE**

### **1. Introduction and overview**

We begin by discussing the course mechanics, objectives, and assignments. We will also review the assumptions behind the instructor's approach to technology, the structure of the course, and the performance expectations.

## **PART I – WHY COMPUTING IS A BUSINESS PROBLEM**

### **2. Intellectual foundations: Information and control in the firm**

We examine why information is important to the way firms operate. We review an important conversation between JoAnne Yates and her mentor, the great historian of business Alfred Chandler: How does communications infrastructure help firms grow?

Marcus, Philip. 1980. Review of *The Visible Hand* by Alfred Chandler. *Contemporary Sociology* 9(1): 81-82

Chandler, Alfred. 1977. "Introduction." *The Visible Hand, The Managerial Revolution in American Business* p 1-12

Temin, Peter. 1978. Review of Chandler's *The Visible Hand*. *The Bell Journal of Economics* 9(1): 297-303

Lipartito, Kenneth. Review of *Control through Communication* by Joanne Yates. *The Journal of Interdisciplinary History* 21(1): 174-176

Yates, JoAnne. 1989. "The Emergence of the Memo as a Managerial Genre." *Management Communication Quarterly (1986-1988)* 2(4): 485-510

### **3. What is your relationship to information technology?**

In this class, students will reflexively evaluate their personal relationship to information technologies. How much do you know? How are you situated in relation to your peers? How will you deal with increasingly complex technical systems in the workplace?

Licklider, J. C. R. 1960. "Man-Computer Symbiosis." *IRE Transactions on Human Factors in Electronics* 1: 4-11.

Eli the Computer Guy. 2011. Introduction to Cloud Computing [1:16:49]  
Available on YouTube: <https://www.youtube.com/watch?v=QYzJI0Zrc4M>

**EXERCISE A:** Do independent research on one technical term related to cloud, be prepared to discuss your findings in class. (We will select the terms in week 2.)

#### 4. Buying computational power

Where do companies get their technology? We will begin to think about the position of managers and workers in relation to a market where information technology gets designed, bought and sold.

BBC4. 1992. The Machine That Changed the World - Episode 2: Inventing the Future [55:16] YouTube: <https://www.youtube.com/watch?v=krIZf5H7Hp4>

Zuboff, Shoshana. 1984. "Chapter 2. The Abstraction of Industrial Work" in *In the Age of the Smart Machine: The Future of Work and Power*: Basic Books: 58-96

## PART II –THE BUSINESS OF COMPUTATION

#### 5. From mainframes to personal computers

The personal computer is built for individuals but it is also the machine that allowed computers to become an everyday tool in business operations. We examine the storied history of the PC to understand the pre-conditions for the emergence of cloud.

BBC4. 1992. The Machine That Changed the World - Episode 3: The Paperback Computer [55:16] YouTube: <https://www.youtube.com/watch?v=d7DKVfOXr54>

Cringley, Robert X. 1996. PBS: Triumph of the Nerds. Part 1, 2 & 3 [50:00 each]  
YouTube: <https://www.youtube.com/watch?v=AIBr-kPgYuU>  
YouTube: <https://www.youtube.com/watch?v=MSSjaGbM7j0&t=3933s>  
YouTube: <https://www.youtube.com/watch?v=WpdhFAKPsT4>

#### 6. Imagining computing as infrastructure

The PC model imagines that every person can have access to a little computer. This is not the only way to provide computational power to end-users. We will look at another vision of how to distribute it. We ask: What are the economics of computational power?

Greenberger, Martin. 1964. "The Computers of Tomorrow." *The Atlantic* pp. 63-67

Campbell-Kelly, Martin and Garcia-Swartz, Daniel. 2008. "Economic Perspectives on the History of the Computer Time-Sharing Industry, 1965-1985. *IEEE Annals of the History of Computing* pp. 16-36

**EXERCISE B:** Compare and contrast the economics of time-sharing to the economics of the PC model discussed in week 5.

### 7. Big data, targeted advertising: the economics of the Internet

If cloud computing was not initially a success why are we moving towards it today? We look at how the structural features of Internet connectivity through ubiquitous and increasingly inexpensive devices gave rise to mass data collection on individual users.

Crane, Matt. 2018. "Chapter 22: A Critical Political Economy of Web Advertising." in *The SAGE Handbook of Web History*, edited by Niels Brügger and Ian Milligan.

Martinez, Antonio Garcia 2016. *Chaos Monkeys: Obscene Fortune and Random Failure in Silicon Valley*: Harper. [excerpt TBD]

Jardine, Eric. 2017. "'Something is rotten in the state of Denmark' Why the Internet's advertising business model is broken." *First Monday*.

### 8. Being agile, being lean

The economics of the Internet have changed the products that big tech is selling. This week we understand what it means to move from software-as-a-product to software-as-a-service (SaaS). We also take note of how models developed to support SaaS have been reimagined as a general approach to project management across industries.

Gürses, Seda, and Joris van Hoboken. 2018. "Privacy in Service-Oriented Architectures Or Privacy After the Agile Turn." Pp. 579 - 601 in *The Cambridge Handbook of Consumer Privacy*: Cambridge University Press.

Blank, Steve. 2013. "Why the Lean-Start-up Changes Everything." in *Harvard Business Review*

**EXERCISE C:** Find and review materials about agile or lean management. What do these terms look like when presented as general theories of management that apply beyond tech companies to all kinds of organizations?

### 9. The rise of the Big Five

In this class we examine structural changes in the technology industry. We ask: Why is tech the strongest economic sector post-2008? We review the materials from weeks 5,6,7 and 8 to understand how connectivity through cloud is a powerful economic and social structure. We revisit the question of corporate control from week 2.

[Materials TBD]

### 10. AI and optimization

AI is being touted as the solution to everything. We ask: What is the tech industry selling us and how is it different than the products it sold before? What is AI and why an important product or service within a cloud environment?

[Materials TBD]

**EXERCISE D:** Many applications of AI that have made the news in recent months. Search for one that catches your attention. Explain why you find this case interesting.

## PART III – ISSUES WITH CLOUD SERVICES

### 11. System security

Firms face a problem of keeping their data secure. What is the nature of this problem with cloud services? How is this a different problem than before and why?

[Materials TBD]

[Reading by Paul Baran]

**EXERCISE E:** TBD (The topic will relate to security).



## 12. Energy consumption

Electronic computing and data storage are energy intensive processes. In this class we take awareness of the growth of cloud infrastructure and its astonishing energy costs.

Tison, Coline and Lichtenstein, Laurent. 2015. "Datacenter: The Hidden Face of the Web" Camicas Productions. Vimeo: <https://vimeo.com/130194742> [54:00]

Mills, Mark. 2013. "The Cloud Begins with Coal." Digital Power Group. Pp 45

## 13. Course Review

Are business needs driving cloud or is cloud driving business? What does the firm become in relation to cloud? We close by comparing and contrasting the classic vision of the firm presented in week 2 to the model of the firm under cloud services. We will also review the major themes of the course in preparation for your final report.