



Carleton University
Spratt School of Business
BUSI4404A
Winter 2019
IT Infrastructure

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Class meets: Wednesday 11:35 – 14:25, Loeb Building Room B146 (starts Jan 9, 2019)

Pre-requisites: Third year standing and BUSI2400 (with a grade of C- or higher).

The School of Business enforces all prerequisites. It is your responsibility to ensure you meet the prerequisite requirements for this course. If you have taken a course or courses that you think is/are equivalent to the prerequisites specified for this course, you must show proof to the Undergraduate Adviser. Please bring in your transcript and course description(s). Failure to document this requirement will lead to mandatory deregistration. Only the School of Business can waive prerequisite requirements.

Course Description:

Challenges and issues managers face in assembling the infrastructure for IT service delivery. IT Service levels, data communications, networks (LAN, MAN, WAN, wireless), internetworking, web services, XaaS, server and storage virtualization, network security, business continuity and disaster recovery.

Introduction:

Telecommunications and data networking technologies are transforming how IT services are delivered in organizations. People and organizations increasingly are conducting their work and operations across time and space using computing and telecommunication networks. The technologies and applications afforded by these networks present unique management challenges. Businesses now depend on information and telecommunications technologies and services for both their survival and profitability. The strategic impact of IT infrastructure on the firm's value chain is enormous. Managers therefore, must become

familiar and conversant with the technologies underpinning IT Infrastructure and how best to apply and exploit them in generating business value.

Course Objectives:

The course is designed for business students who need to develop an understanding of IT infrastructure technologies as well as the challenges and opportunities associated with them. While it does cover some technical aspects of data and telecommunications, the course is not designed to train computer and telecommunications networking engineers.

The course will:

- enable students to develop an understanding of the fundamental concepts of telecommunications, data communications and networking.
- familiarize students with network technologies, protocols and standards.
- explore the managerial considerations surrounding telecommunications and networking applications design, procurement and deployment.
- address issues related to the impact of telecommunications and networking technologies on the globalization of business activity and electronic commerce.

Reading(s)/Textbook(s):

Fitzgerald, J. and Dennis, A. (2017) Business Data Communications and Networking, 13th Edition, John Wiley and Sons. The e-book can be purchased directly online at: <https://www.wiley.com/en-ca/Business+Data+Communications+and+Networking%2C+13th+Edition-p-9781119368830>

Note: The 12th edition is a lot cheaper and that is what I am going to be using so you can save some \$\$\$.

Other References:

1. White, C. (2009) Data Communications and Computer Networks, Thomson Course Technology. 5th Edition.
2. Dennis, Alan (2002) Networking in the Internet Age, New York: John Wiley & Sons.
3. Stallings, W. (2001) Business Data Communications. Upper Saddle River, New Jersey: Prentice Hall, 4th Edition.

Other References:

Network Computing (www.networkcomputing.com), Network World (www.networkworld.com), Whatis.com (www.whatis.com), Datamation (www.datamation.com), Information Week (www.informationweek.com)

EVALUATION AND GRADING

Grades will be based on 4 in-class quizzes, a midterm exam, one group project, and a final exam. The distribution of marks towards the final grade will be as follows:

Quizzes (4) 20%
Midterm 25%
Group Project 25%
Final Exam 25%
Participation 5% (based on in-class and project participation)
Total 100%

Quizzes

Four (4) quizzes will be given during the term at the dates listed in the schedule. There is no make-up for missed quizzes.

Group Project

For the team project, students working in group of four (ideally) will conduct a full IT review of a local company, not-for-profit organization, or government entity and are expected to do a complete technology review of the company. Particular attention should be paid to problems or challenges that the organization may be having with their IT infrastructure (technical or operational) which may be solve-able by making changes to some part of the IT infrastructure. You should also look at how the organization is leveraging modern technologies. The proposal to change the IT infrastructure must detail the planned solution and roadmap to implementation. The proposal must be in a form for presentation to upper management in order to secure sponsorship, support, and funding for the plan. The proposal must include key elements such as cost-benefit analysis, budget, expected timeline etc.

Group Project Deliverables

Deliverables for the team project include the following: a project proposal, project report, project presentation, and a peer evaluation.

1. Team Project Proposal: (10% of project grade) The proposal should outline the business the team will be investigating and reporting on. It should contain the following: a title for the project, a short description and rationale, possible sources of information, resources that may be needed, technology areas that are going to be reviewed and modern technologies that may be applicable. I will review each project proposal to verify its appropriateness for the course. The proposals must be submitted by the third class meeting.

2. Project Report: (60% of project grade) The project report should contain an overview of the business, its main activities, a summary of the IT infrastructure currently in use, current problems being faced, modern technologies being leveraged and include a detailed proposal for upgrade and request for funding, targeted at, and delivered in the language of, upper management.

The proposal should contain at least the following: a title page; an executive summary page; table of contents and list of figures; departmental/company overview (i.e. how the affected department fits within, and contributes to, the overall organization); description of IT problems and how it may be negatively impacting the operations of the department/company; scope and requirements of proposed solution; short-list of vendors and vendor selection criteria (if applicable); cost-benefit analysis for proposed solution. If investments are needed, include an estimated payback period with a minimum analysis horizon of one year; proposed implementation plan for the solution (including budget and timeline); references; and appropriate appendices and illustrations. The report should not be more than 4000 words in length, excluding appendices and illustrations. You will lose 1 point for every 100 words over the allowed limit for the report.

Examples of emerging technical areas (Not an exhaustive list, you can pick something else):

- Big Data / Hadoop etc.
- Office automation / IoT
- Robotics
- RFID
- Mobility solutions
- Neural networks
- AI / Machine Learning
- Blockchain
- Business Intelligence / Business Analytics
- VOIP networks / telephony
- Social media integration
- Satellite / GPS
- Remote work / Virtual Private Network
- Data Centers / Virtualization
- Managed Hosting
- XaaS Frameworks
- Network management services
- Security and disaster recovery services
- Desktop management and support services
- Cloud / Distributed Computing
- 3rd party Authentication services (RSA etc.)
- Encryption
- Augmented reality
- Real-time access to data

3. Project Presentation: (30% of project grade) Each team will give an in-class presentation of its project. Time will be split between the actual presentation and some time set aside for questions. The limited presentation time makes it imperative for the group to organize what is to be presented. Visual aids should be used to enliven the

presentations. However, these must be well designed and clear. All team members should take part in the presentation. The audience is expected to participate and ask questions to the presenting teams (worth up to 5%).

4. Peer Evaluation: Each student will be required to perform a peer evaluation of his or her peers' involvement and performance in the project team (involvement and performance in the project preparation and presentation, and team formation and development). The peer evaluation must be submitted by midnight, April 12, 2019 via cuLearn. The peer evaluation will be used to adjust your project grade downward by a maximum of 20 points. Failure to submit an evaluation will lead to a loss of 10% of your project grade. The peer evaluation forms can be downloaded from the course resources page on cuLearn.

Assignment Submission

All written assignments should be submitted to the Instructor by 6:00 p.m., CuLearn, on the day they are due. It is the student's responsibility to ensure that all assignments are received in an accessible format on or before the due date. Assignments are due at the time indicated. Late assignments will be marked down by 10% for every calendar day late (only when late submissions are allowed). All documents should have the student's name, number, and course section.

Satisfactory In-term Performance

To receive a passing grade in this class, students must complete all deliverables and receive a minimum average of 50% across all in-term course work.

Course Schedule: (subject to change)

DATE	DESCRIPTION	Content	Deliverable(s)
JAN 9	INTRO. TO DATA COMMUNICATIONS	CHAPTER 1	
JAN 16	APPLICATION LAYER	CHAPTER 2	
JAN 23	PHYSICAL LAYER	CHAPTER 3	QUIZ 1 PROJECT PROPOSAL
JAN 30	DATA LINK LAYER, NETWORK AND TRANSPORT LAYERS	CHAPTER 4, 5	
FEB 6	NETWORK DESIGN WIRED AND WIRELESS LAN	CHAPTER 6	
FEB 13	BACKBONE NETWORKS	CHAPTER 7	QUIZ 2
FEB 18-22	WINTER BREAK		
FEB 27	MIDTERM EXAM	CH 1 – 7	IN CLASS
MAR 6	WIDE AREA NETWORKS	CHAPTER 8	
MAR 13	INTERNET	CHAPTER 9	QUIZ 3
MAR 20	NETWORK SECURITY	CHAPTER 10	
MAR 27	NETWORK MANAGEMENT	CHAPTER 11,12	QUIZ 4
APR 3	PROJECT REPORT DUE	IN CLASS PRESENTATION	
TBD	FINAL EXAM		

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 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, 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, Accommodations, Etc.

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 Accommodations

For Students with Disabilities:

The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your **Letter of Accommodation** at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (*if applicable*). **Requests made within two weeks will be reviewed on a case-by-case basis.** After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website (www.carleton.ca/pmc) for the deadline to request accommodations for the formally-scheduled exam (*if applicable*).

For Religious Obligations:

Students requesting academic accommodation on the basis of religious obligation 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 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 and instructors can confirm accommodation eligibility of a religious event or practice by referring to the Equity Services website (<http://carleton.ca/equity/accommodation/religious-observances/>) for a list of holy days and Carleton's Academic Accommodation policies. If there are any questions on the part

of the student or instructor, they can be directed to an Equity Services Advisor in the Equity Services Department for assistance.

For 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, 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/>.

Sprott Student Services

The Sprott student services office, located in 710 Dunton Tower, offers academic advising, study skills advising, and overall academic success support. If you are having a difficult time with this course or others, or just need some guidance on how to successfully complete your Sprott degree, please drop in any weekday between 8:30am and 4:30pm. Our advisors are happy to discuss grades, course selection, tutoring, concentrations, and will ensure that you get connected with the resources you need to succeed! <http://sprott.carleton.ca/students/undergraduate/learning-support/>

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/>
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