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):**


The e-book can be purchased directly online at: [http://ca.wilev.com/WilevCDA/Section/id-814611.html](http://ca.wilev.com/WilevCDA/Section/id-814611.html)

**Other References**


**Online References**

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:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quizzes (4)</td>
<td>20%</td>
</tr>
<tr>
<td>Midterm</td>
<td>25%</td>
</tr>
<tr>
<td>Group Project</td>
<td>25%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>30%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Quizzes
Four (4) quizzes will be given during the term at the dates listed below. They will cover material in both the previous chapters and the chapter that is being covered on that particular day. There is no make-up for missed quizzes.

Group Project
For the team project, students working in groups of three or four people (groups of two will not be allowed) will conduct a case study of a local company, not-for-profit organization, or government entity faced with a specific IP infrastructure management challenge (technical or operational) which can be solved by upgrading some part of the IT infrastructure. Each group will develop a proposal which details 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 what the team plans to investigate and report 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, and a project management schedule for the team's project (not the final implementation of the proposal). 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 be constructed as a 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 the problem and how it is 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 (do not include items: discounting/net present value/time value of money, uncertainty/sensitivity analysis; but do include an estimated payback period with a minimum analysis horizon of one year); proposed implementation plan for the proposed 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.

3. Project Presentation: (30% of project grade) Each team will give an in-class presentation of its project lasting no more than 15 minutes. This will consist of 12 minutes for the actual presentation and 3 minutes 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 7, 2017 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.

Example Project Focus Areas (Not an exhaustive list, you can pick something else):

- Data and Telecommunications strategy
- LAN equipment and hardware provision
- Voice over IP telephone services
- Remote and mobile network access services
- Network management services
- Security and disaster recovery services
- Desktop management and support services
- Virtual Private Network
- Cloud Computing
- Managed Web hosting services

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.

Class News and Updates

Please check the class webpage at http://culearn.carleton.ca for regular news and updates.
Course Schedule: (subject to change)

<table>
<thead>
<tr>
<th>WEEK (DATE)</th>
<th>TOPIC (CHAPTER)</th>
<th>GROUP ASSIGNMENT</th>
<th>READINGS / QUIZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1 (Jan 11)</td>
<td>INTRO. TO DATA COMMUNICATIONS</td>
<td></td>
<td>CHAPTER 1</td>
</tr>
<tr>
<td>Week 2 (Jan 18)</td>
<td>APPLICATION LAYER</td>
<td></td>
<td>CHAPTER 2</td>
</tr>
<tr>
<td>Week 3 (Jan 25)</td>
<td>PHYSICAL LAYER</td>
<td></td>
<td>CHAPTER 3, QUIZ 1</td>
</tr>
<tr>
<td>Week 4 (Feb 1)</td>
<td>DATA LINK LAYER, NETWORK AND TRANSPORT LAYERS</td>
<td></td>
<td>CHAPTER 4, 5</td>
</tr>
<tr>
<td>Week 5 (Feb 8)</td>
<td>NETWORK DESIGN WIRED AND WIRELESS LAN</td>
<td></td>
<td>CHAPTER 6,7, QUIZ 2</td>
</tr>
<tr>
<td>Week 6 (Feb 15)</td>
<td>BACKBONE NETWORKS</td>
<td></td>
<td>CHAPTER 8, QUIZ 3</td>
</tr>
<tr>
<td>Feb 20-24</td>
<td>Winter Break</td>
<td></td>
<td>NO CLASS</td>
</tr>
<tr>
<td>Week 7 (Mar 1)</td>
<td>MIDTERM EXAM</td>
<td></td>
<td></td>
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<tr>
<td>Week 8 (Mar 8)</td>
<td>WIDE AREA NETWORKS</td>
<td></td>
<td>CHAPTER 9</td>
</tr>
<tr>
<td>Week 9 (Mar 15)</td>
<td>INTERNET</td>
<td></td>
<td>CHAPTER 10</td>
</tr>
<tr>
<td>Week 10 (Mar 22)</td>
<td>NETWORK SECURITY</td>
<td></td>
<td>CHAPTER 11, QUIZ 4</td>
</tr>
<tr>
<td>Week 11 (Mar 29)</td>
<td>NETWORK MANAGEMENT</td>
<td></td>
<td>CHAPTER 12</td>
</tr>
<tr>
<td>Week 12 (April 5)</td>
<td>PROJECT REPORT</td>
<td>PROJECT REPORT DUE IN-CLASS PRESENTATION</td>
<td></td>
</tr>
<tr>
<td>April 7</td>
<td>PEER EVALUATION</td>
<td></td>
<td></td>
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<tr>
<td>TBD</td>
<td>FINAL EXAM</td>
<td></td>
<td></td>
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</tbody>
</table>

ADDITIONAL INFORMATION

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).

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 10b

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:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>90-100</td>
</tr>
<tr>
<td>A</td>
<td>85-89</td>
</tr>
<tr>
<td>B+</td>
<td>77-79</td>
</tr>
<tr>
<td>B</td>
<td>73-76</td>
</tr>
<tr>
<td>C+</td>
<td>67-69</td>
</tr>
<tr>
<td>C</td>
<td>63-66</td>
</tr>
<tr>
<td>D+</td>
<td>57-59</td>
</tr>
<tr>
<td>D</td>
<td>53-56</td>
</tr>
</tbody>
</table>
A - = 80-84  B - = 70-72  C - = 60-62  D - = 50-52
F   = Below 50
WDN = Withdrawn from the course
ABS = Student absent from final exam
DEF = Deferred (See above)
FND = (Failed, no Deferred) = Student could not pass the course even with 100% on final exam

FND:
To reduce instances of miscommunication Carleton introduced a grade FND (Failure with No Deferral) to be assigned to students who fail to meet the minimum in-term performance standards explicitly set out in the outline and applied consistently (i.e., there is no other hidden criteria). FND grade in this course will be assigned to students who missed the group project.

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). Deadline for April 2017 exams is March 10th, 2017.

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 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.

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 in 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: http://carleton.ca/studentaffairs/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’re 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/

Be in the know with what’s happening at Sprott: Follow @SprottStudents and find us on Facebook Undergraduate Students at the Sprott School of Business.

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, it would be easier to respond to your inquiries if you would send all email from your Carleton 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/