

## THE ELECTRONIC INFORMATION NETWORK MARKETPLACE

COMN 4520 – Fall 2018

version 1.4

*“Just deliver the bits, stupid.”*

— David Isenberg, 1998

Instructor: David Ellis, PhD  
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 Student consultations by appointment

### COURSE DESCRIPTION

This course is devoted to understanding the global public Internet and how it works. Unlike some Communication Studies courses, our focus is not on network content but network platforms — and on the enabling technologies that make the Internet an engineering and cultural marvel. We also devote much of the winter semester to examining social issues related to online life, especially privacy and security.

Our approach to the course topics is evidence-based. We consider factual and quasi-factual information from many sources, including numerical data from academic research, consumer surveys and market forecasts. The main purpose is to develop a critical framework for assessing the competing claims of actors in the communications industry, including network operators, government agencies and consumer advocates. A second purpose is to make students more keenly aware of how digital technologies influence their day-to-day welfare. The course follows current events closely.

### Course goals

By taking this course, you will:

- Be amazed at what you accomplish after ditching your phone for 3 hours
- Learn how the Internet actually works
- Keep up with current events that affect your digital life
- Appreciate why an open Internet is crucial to your future
- Take online security and privacy a lot more seriously
- Develop skills for the job market
- Become a smarter tech consumer
- Get detailed feedback on your work, including your writing

### REQUIRED READINGS

They're called “required” readings because all students are required to read them — and to do so by the stipulated deadline. In order to encourage timely coverage of the course materials, students keep an official notebook containing their reading and discussion notes, which are vetted regularly by the instructor (the class notebook counts for 20% of the final grade). The required readings are all available free in html or pdf, except for the just-released book by Bruce Schneier (not needed till January). We supplement the core readings with contextual material drawn from online sources, particularly Benton's Communications-related

Headlines, which requires a free subscription. The syllabus, course downloads and other material are posted to the instructor's website at [www.davidellis.ca](http://www.davidellis.ca), and updated regularly.

## WEEKLY OUTLINE & READING SCHEDULE

### < Fall Semester >

**Tue Sept 11 (#1)** — Orientation: course structure, grading scheme, student responsibilities

**Tue Sept 18 (#2) — Humanizing technology: the screen addiction epidemic (1/2)**

Reading (R1): Jean Twenge, PhD (Sept 2017), "Have Smartphones Destroyed a Generation?" — *The Atlantic* (html)

(R2): Richard A. Friedman, MD (Sept 7, 2018), "The Big Myth About Teenage Anxiety" — *The New York Times*

**Tue Sept 25 (#3) — Humanizing technology: online behaviors and attitudes (2/2)**

Reading (R3): Pew Research Center (Apr 2018), "Social Media Use in 2018" (pdf)

Reading (R4): Pew Research Center (Mar 2018), "Declining Majority of Online Adults Say the Internet Has Been Good for Society" (pdf)

**Tue Oct 2 (#4) — When it's the stupid technology that's smart**

Reading (R5): David Isenberg (1998), "The Dawn of the Stupid Network" (html)

>> **Tue Oct 9 — Reading week — No class** <<

**Tue Oct 16 (#5) The TCP/IP protocol suite — Quiz #1**

Reading (R6): Severance videos #1-7 (2012) – Overview (25 min), Link layer (10 min), Internetwork (IP) layer (38 min), Transport (TCP) layer (15 min), Transport (TCP) layer summary (4 min), Security layer (23 min), Application layer (26 min) — Dropbox

**Tue Oct 23 (#6) — Peering and transit: the rise and fall of Internet backbones (1/2)**

Reading (R7): Wikipedia entry on *Peering* (html)

**Tue Oct 30 (#7) — Peering and transit: the rise and fall of Internet backbones (2/2) — Report #1: Proposal due**

Reading (R8): Robert Cannon (Dec 2017), "History and Evolution of Internet Backbones & Interconnection," Cybertelecom blog (html)

**Tue Nov 6 (#8) — Get off of my cloud (1/2) — Quiz #2**

Reading (R9): Wikipedia entry on *Cloud computing* (html)

**Tue Nov 13 (#9) — Get off of my cloud (2/2) — Report #1 due**

*With special guest discussant William Pourmajidi, Senior Cloud Architect and Ph.D. candidate, Dept of Computer Science, Ryerson University*

**Tue Nov 20 (#10) — The last mile: broadband and next-generation networks (1/2)**

Reading (R10): Reza Rajabiun, Catherine Middleton (Aug 2017), "Strategic choice and broadband divergence in the transition to next generation networks: Evidence from Canada and the U.S." (pdf)

*With special guest discussant Dr Reza Rajabiun, paper co-author, telecommunications scholar and consumer advocate*

**Tue Nov 27 (#11) — The last mile: broadband and next-generation networks (2/2)**

Reading (R11): Volker Stockera, Jason Whalley (July 2017), "Speed isn't everything: A multi-criteria analysis of the broadband consumer experience in the UK," Telecommunications Policy (pdf)

**Tue Dec 4 (#12) — The state of the Internet 2018 — Interim notebook grading — Quiz #3**

Reading (R12): *CHANGE* — Sandvine (Oct 2018), The Global Internet Phenomena Report (pdf)

**< Winter Semester >****Tue Jan 8 (#13) — Hyperconnectivity and the IoT**

Reading (R13): *UPDATED* — Cisco Systems (Nov 2018), *Cisco Visual Networking Index: Forecast and Trends, 2017–2022* (pdf)

Reading (R14): Bruce Schneier (April 2017), Regulating the Internet of Things, IGP video (html)

**Tue Jan 15 (#14) — Click here to kill everybody: our bleak online future (1/3)**

Reading (R15): Bruce Schneier (Sept 2018), *Click Here To Kill Everybody: Security and Survival in a Hyper-connected World* (YU bookstore purchase)

**Tue Jan 22 (#15) — Click here to kill everybody: our bleak online future (2/3) — Quiz #4**

Reading (R15): Schneier, *Click Here To Kill Everybody*

**Tue Jan 29 (#16) — Click here to kill everybody: our bleak online future (3/3)**

Reading (R15): Schneier, *Click Here To Kill Everybody*

**Tue Feb 5 (#17) — It's an algorithmic world (1) — Report #2: Proposal due**

Reading (R16): danah boyd (2014), *it's complicated: the social lives of networked teens*, pp. 183-192 (The Politics of Algorithms + Wikipedia as a Site of Knowledge Production: pdf)

Reading (R17): Evgeny Morozov (July 2014), "The rise of data and the death of politics" — *The Guardian* (html)

**Tue Feb 12 (#18) — It's an algorithmic world (2)**

Reading (R18): Pew Research Center, *Code-Dependent: Pros and Cons of the Algorithm Age* (Feb 2017 - pdf)

< Tue Feb 19 - Reading Week - No Class >

**Tue Feb 26 (#19) — The world wide spider's web of targeted advertising — Quiz #5**

Reading (R19): Zeynep Tufekci (Sept 2017), "We're building a dystopia just to make people click on ads" (TED Talks video 23 min—html)

Reading (R20): Zeynep Tufekci (Apr 2018), Why Zuckerberg's 14-Year Apology Tour Hasn't Fixed Facebook," *Wired* (html)

**Tue Mar 5 (#20) — Privacy solutions: the General Data Protection Regulation — Report #2 due**

Reading (R21): P.T.J.Wolters (July 2018), "The Control by and Rights of the Data Subject Under the GDPR," *Journal of Internet Law* (pdf)

**Tue Mar 12 (#21) — Privacy & encryption: the Canadian scene**

Reading (R22): Lex Gill, Tamir Israel, Christopher Parsons (May 2018), "Shining a Light on the Encryption Debate: A Canadian Field Guide" (pdf)

**Tue Mar 19 (#22) — Privacy in the news — Quiz #6****Tue Mar 26 (#23) — Review and housekeeping**

Exam and attendance review, notebook grading, course evals

**Tue Apr 2 (#24) — In-class final exam (3 hrs)**

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**GRADING SCHEME**

|                          |     |
|--------------------------|-----|
| Engagement.....          | 20% |
| Course notebook.....     | 20% |
| Written quizzes (6)..... | 20% |
| Field reports (2).....   | 20% |
| Final exam (3 hrs).....  | 20% |

**Engagement.** This component is a measure of how well you listen to and follow instructions; how well you interact with your classmates; and how much you contribute to our collective effort to learn new ideas. Being

punctual, making a real effort in the course and keeping a positive attitude will help boost this grade. You must notify me by email *beforehand* if you can't attend a class.

**Course notebook.** You'll be graded on how thoroughly you document our discussions and your readings in your notes, which are kept for the duration of the course in a looseleaf binder. The notebook contains dedicated sections for: i) course materials like syllabus, ii) classroom notes, iii) reading notes, iv) a glossary and v) notes on current events especially Benton Headlines. Graded at the halfway point and again at the end of the course.

**Written quizzes.** Quizzes cover the course core terminology. They're designed as a training exercise to i) learn the more difficult technical material; ii) develop skill at writing good definitions; and iii) prepare for the terminology section on the final exam (60% of exam grade). Six in all, roughly 20-30 minutes long.

**Written reports.** Our two major written assignments are not conventional essays in the usual format, but reports using observation, measurement and personal experience for much (but of all) of the source material. The emphasis is on crafting clear, accurate descriptions of e.g. the technical and financial features of online services you use personally — not arguing for an abstract "thesis." We also use a house stylesheet that incorporates features reflecting common workplace practice rather than academic convention.

**Final exam.** In the last class period — Tue April 2, 2019. Closed book, three hours.

## 4520 RULES OF THE ROAD

This section of the syllabus spells out important details about course instructions, which may be updated or amended from time to time via class discussions or instructor emails.

**Attendance.** Attendance is not optional: missing any class without prior notice by email to the instructor attracts a minimum penalty of 2 percentage points (deducted from the final course grade). Similar penalties will be applied to any student who is consistently late for class. Regardless of the reason for missing a class, ***it is each student's personal responsibility to stay current on class discussions, readings and scheduled assignments.*** Students are entitled to miss one class during the semester for personal reasons, provided they give the instructor advance notice by email.

**Assignments.** Course assignments must be handed in, printed and stapled, by the stipulated deadline. Failure to do so will result in a penalty against the final grade or the assignment, or both. All the material for this course, especially assignments, should be backed up regularly on an external storage device or via a cloud service like Backblaze. ***Anyone not backed up who has a hard drive failure, or other computer mishap, won't get an assignment deadline extended.***

**Email.** It's each student's responsibility to maintain a working email account for course use **and to check it regularly for updates, requests and/or changes to assignments.** When communicating with the instructor by email, the following protocols apply:

- Send to [jdae@yorku.ca](mailto:jdae@yorku.ca)
- Begin a new email unless actually replying
- Indicate in the email subject field: course number — student name — the actual subject
- Send attachments in PDF only, using a filename for the attachment that identifies course, sender and contents (e.g. 4520—Doe—report#2.pdf)

**Networked devices in class.** Everyone must surrender their phones for the duration of each class. No one may use a laptop or other networked device in class, unless exempted under a formal York accommodation.

**Bonus reading.** Everyone has a chance to earn up to 4 extra points for completing a bonus reading and handing in a short written commentary by the announced deadline. The bonus cannot be used as a substitute for regular assignments. Regular assignments turned in late may result in loss of bonus points.

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## STYLE SHEET FOR WRITTEN COURSE WORK

### *Physical*

- Cover page must show: title, assignment name and number (e.g. Report #2), student name, course number, date submitted AND word count
- For handwritten papers like in-class quizzes: never submit w/o your name, date, course and pagination
- All hand-ins must be stapled

### *Layout*

- Body copy: justified left, ragged right
- Body copy point size: 10 point max
- Font: sans serif fonts only
- Line spacing: double
- **Left margin: 1.5 inches - other 3 margins 1.0 inches - printed page measure and not cm**
- No footnotes or endnotes
- All work paginated in upper right corner
- Block paragraphs — no indents — with an extra line space between paras
- Verbatim quotes of more than 2 lines must be indented

### *Style*

- No paragraphs to exceed one page
- Run spell-check
- Help the reader using signposts: heads, sub-heads, bullets and formatting
- Avoid weasel words: e.g. “Most people love the Internet”
- Do not use 2nd person. Do use 1st person: “I will argue that” — not “It will be argued that”

### *My writing: top 5 weak points*

1 \_\_\_\_\_

2 \_\_\_\_\_

3 \_\_\_\_\_

4 \_\_\_\_\_

5 \_\_\_\_\_