Intent

This is a course intent upon breaking new ground. There are any number of courses in information visualization, in Big Data modeling, in how to make Infographics and other data graphics, and there are many books and web resources that are currently vogue, but real, evidence-based, holistic approaches to communicating complex information are few. The intent of this course is to develop and apply a framework for evidence that supports the most effective conceptual, lexicological, visual, relevant and resonant ways of communicating all sorts of complex information to all sorts of audiences. And because this is as much a research project and lab as it is a course, you are an integral part of it.

Workbook

A lot of what we’re going to be doing in this course is experimental, so we’ll be trying new things as we go along. Some will work, some won’t, and all of that is good learning if you’re trying to discover the best ways of communicating complexity. So the syllabus is something meant to be constantly used, not just as a syllabus that you occasionally refer to, but as a workbook that you can add to (which is why it’s provided in Word format rather than as a pdf. As new information, from our own research or elsewhere, becomes available, incorporate your notes, thoughts, and experiments. And then share with the rest of us.
ComXLab
A laboratory of approaches, tools & techniques for communicating complex information.

Syllabus and Course Workbook
94858 Communicating Complexity  |  Spring, 2016  |  Professor Chris Labash

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0.0 Start

0.1 The Project
Complexity is growing. You know that already. And it’s growing at a rate that’s hard to keep up with. And the only way to understand this increasing complexity is with better communication: better (meaning more understandable and embraceable) words, images, video, audio, you-name-it ways of getting our arms and heads around the new latest product, service, app, idea. This project and its attendant pieces – the research, the course, the lab, the artifacts that come out of it – seeks to help us all make more sense out of our world and the things in it.

0.2 The Course
This is a course focused on doing. The assignments are all either research or projects, and in most cases both. The intent of the course is obviously to make you a better communicator, but its focus is on increasing your ability to notice what is, isn’t, and should be communicated when it comes to complex things. This isn’t a course in writing, or in design, in data structures or how-to-make-a-cool-infographic. It’s a course that looks holistically at the evidence-based best practices in making things clearer, more understandable, more meaningful, and more actionable.
### 0.3 Classflow

Each class will be part discussion, part lab, and usually, part guest expert who will expand our knowledge about the various elements of communicating complexity. Because the course is built more around the studio concept than a traditional lecture, it’s pretty freeform, but here’s the basic structure for the seven weeks:

<table>
<thead>
<tr>
<th>Class Week</th>
<th>Focus</th>
<th>Content</th>
<th>Guest*</th>
<th>Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0 1/11/16</td>
<td>Introduction Clarity Sensemaking</td>
<td>0.1 Introduction, Syllabus review &amp; classflow A1: Lightning Round: Best/worst 1.0 Clarity 1.1 Sensemaking</td>
<td></td>
<td>A1: Best/worst</td>
</tr>
<tr>
<td>2.0 1/18/16</td>
<td>Visualizing</td>
<td>A2: Lightning Round: Visualizations 2.1 Visualization</td>
<td>A2: Cool visualizations</td>
<td></td>
</tr>
<tr>
<td>3.0 1/25/16</td>
<td>Messaging Storymaking</td>
<td>A3: Lightning Round: Briefs 3.1 Messaging 3.2 Storymaking</td>
<td>A3: The Brief</td>
<td></td>
</tr>
<tr>
<td>4.0 2/1/16</td>
<td>Tooltime Lab</td>
<td>A4: Lightning Round: Cool tools 4.1 Tools &amp; Techniques Josh Knauer</td>
<td>A4: Cool tools</td>
<td></td>
</tr>
<tr>
<td>5.0 2/8/16</td>
<td>Mid-term presentations</td>
<td>Mid-term presentations</td>
<td>A5: Mid-term presentations</td>
<td></td>
</tr>
<tr>
<td>6.0 2/15/16</td>
<td>Lab</td>
<td>6.1 Making sense of too much data Abu Noaman</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.0 2/22/16</td>
<td>Final Presentations</td>
<td></td>
<td>A7: Final presentation (With poster)</td>
<td></td>
</tr>
</tbody>
</table>
0.4 Grading

Attendance: On the one hand, it’s your money and if you want to blow off the course it should be your decision, and your consequences that you have to live with. On the other, since this is a course about communication, its central concept is one of communicating. Since you have an obligation to your fellow students to be part of the course discussions, and since the instructor and the university have an obligation to put prepared, professional graduates out in an unforgiving workplace, attendance at each class is strongly urged. I won’t say that it is mandatory, as you’re all adults and can figure out for yourselves what to do. But I do notice. And by the way, I often give instructions in class that aren’t included in this syllabus. You missing those instructions due to absence could seriously impact your grade.

Scheme: Here’s how your grade gets decided:

<table>
<thead>
<tr>
<th>Class assignments</th>
<th>2.5% each</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid-term presentation</td>
<td>25%</td>
</tr>
<tr>
<td>Final presentation</td>
<td>30%</td>
</tr>
<tr>
<td>Research Observation</td>
<td>25%</td>
</tr>
<tr>
<td>Contributions to wiki</td>
<td>10%</td>
</tr>
</tbody>
</table>

The standard grading scale applies, which means that to get an “A”, you must be perfect: perfect on every assignment. Here’s the grading scale, per the Heinz College Handbook, Section 5.1:

- A+: 4.33
- A: 4.00
- A-: 3.67
- B+: 3.33
- B: 3.00
- B-: 2.67
- C+: 2.33
- C: 2.00
- C-: 1.67
0.5 Academic integrity

In other words, cheating. Here’s the good news: this is a really hard course to cheat in. Here’s even better news: we can be very clear about what cheating is (and if you have any question about whether something would be considered cheating, ask me):

Cheating: “intentionally using or attempting to use unauthorized materials, information, or study aids in any academic exercise.”

Fabrication: “intentional and unauthorized falsification or invention of any information or citation in an academic exercise.”

Plagiarism: “deliberate adoption or reproduction of ideas or words or statements of another person as one’s own without acknowledgement.”

And equally clear about the University’s policy toward cheating:

http://www.cmu.edu/policies/documents/Cheating.html

And more important, clear about the best ways for you to not feel compelled to cheat (not that you would)…

Prioritize your work: time management is your friend.

Own your own work: Be proud of your work. Why would you want to take credit for someone else’s? Always cite your sources.

Get help: When you have trouble, get help from Instructors or TAs.

And of course, there is the overriding ethical consequence: when you cheat you diminish your self (yes, in the psycho-philosophical sense), you devalue your work, and you dishonor your community and your history.

Of more immediate relevance might be this: cheat in my class and I will at the least lower your grade by one letter; the more likely outcome is that I will fail you. So seriously, why would you plagiarize, fabricate, or cheat in any way?

(Many thanks to the students of course 95718, Professional Speaking, Sections A3 and B3 – Spring 2007, and to my teaching assistants, Shivani Pandey and Nomita Rajan, for their hard work in putting the above together.)
0.6 Note-taking
You will not see many handouts in this course for the simple reason that I want you to take notes: copious, glorious, full, illustrated, clear, structured, unstructured notes. The value of good note-taking cannot be overstated. This is a skill that will serve you well for the rest of your career, and your life. If, like most contemporary students, you’ve had little or no formal education in note-taking, go to http://lsc.cornell.edu/LSC_Resources/cornellsystem.pdf for a look at an example, and https://www.youtube.com/watch?v=WtW9IyE04OQ for a nice little explanatory video.

0.7 Approach
While there are a host of academic and other courses in information visualization, technical writing, and design, courses that offer a more holistic approach to communicating complexity are few. A review of the current literature and research (including that which drives this project) suggests that, as a starting point, an approach to communicating complex information should encompass the following five areas (links direct to the ComXLab wiki):

**Clarity:** The "gateway standard" as Paul and Elder (2001, 2007) call it in their *Universal Intellectual Standards* for critical thinking. We will be exploring ways of setting expectations for -- and ensuring -- clarity by defining associated elements and principles.

**Sensemaking:** Karl Weick popularized this term in his 1995 book (and the research that supported it) *Sensemaking in Organizations*, though the idea goes as far back as Aristotle. Waterman (1990) called it "structuring the unknown," and for our purposes that's a good shorthand. We'll look at ways of understanding and constructing frameworks to help audiences "comprehend, understand, explain, attribute, extrapolate, and predict" (Starbuck & Milliken, 1988) complex information.

**Messaging:** By "messaging" we do not mean "digital messaging" but the hard work and focus of crafting good, understandable messages that target audiences can easily process. Like many of the other areas in communicating complexity, there is a good deal of personal domain expertise, but not much in the way of academic rigor. This project seeks to change that.

**Visualizing:** The problem with visualization, unlike other areas of communicating complexity, isn't the insufficiency of research, but rather the abundance of it. And as this area is "hot" right now, anyone who calls themselves any kind of designer and has done one or more infographics feels that they are an expert. Our challenge here is to sift through the mass of evidence and opinion to find what most advances the communication of the complex.
Storymaking: Telling a good story isn't the primary issue in communicating complexity; crafting the right story, with data as its foundation, is. This is the culmination of the other four areas, and our research and lab work will center on combining clarity, sensemaking, messaging and visualizing to create and relate a strong, understandable, actionable story.

Obviously, as our research progresses, we'll be returning often to test, add to, or change this structure.

The following pages are the start of your workbook.
1.0 Clarity
2.0 Sensemaking
3.0 Messaging
4.0 Visualization
5.0 Storymaking
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6.0 Sources & Resources