

HUM 346/ENG 256

INTRO TO DIGITAL HUMANITIES: DATA AND THE HUMAN

with EMILY MCGINN

This class will discuss how data is implemented in real world scenarios and the impacts of data on human lives. Using Digital Humanities methods and tools the class will learn how to ask questions and create an ethical hypothesis from humanities data.
This class fulfills the QCR and LA requirements.

Tuesday & Thursday 8:30-10:00 a.m.

Center for Digital Humanities
Firestone Library Floor B



Scree

HUM 475 / ENG 475

DATA AND LITERARY STUDIES: A RESEARCH LAB

with SIERRA ECKERT

This seminar will look at the data of literary study—from colonial lending library records to course syllabi and poems—and what they can tell us about how cultural works are produced, consumed, consecrated, and distributed. We'll learn advanced techniques in computer-assisted reading and situate them within a longer genealogy that includes book history, critical archival studies, and Marxist literary theory.

(Open to graduate students; fulfills QCR and LA requirements)



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Monday & Wednesday, 1:30-2:50 p.m.

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THE CENTER
FOR DIGITAL
HUMANITIES
#PRINCETON

Hardware

- **logical/functional/architectural structure**
 - bus connects processor, primary memory, disks, other devices
 - caching
 - CPU cycle: fetch-decode-execute; kinds of instructions
 - toy machine as an example
 - different processor families are incompatible at the instruction level
 - von Neumann: architecture; Turing: equivalence of all machines
- **physical implementation; sizes and capacities**
 - chips; Moore's law, exponential growth
- **analog vs digital**
- **representation of information**
 - bits, bytes, numbers, characters, instructions
 - powers of 2; binary and hexadecimal numbers
 - interpretation determined by context
- **it's all bits at the bottom**

Software

- **algorithms: sequence of defined steps that eventually stops**
 - complexity: how number of steps is related to amount of data
 - linear: searching, counting, ...
 - quadratic: simple sorting
 - logarithmic: binary search (logarithm = number of bits needed to store)
 - $n \log n$: quicksort
 - exponential: towers of Hanoi, traveling salesman problem, ...
- **programs and programming languages:**
 - evolution, language levels: machine, assembly, higher-level
 - translation/compilation; interpretation
 - a program can simulate a machine or another program
- **basic programming**, enough to figure out what some code is doing
 - variables, constants, expressions, statements, loops & branches (if-else, while), functions, libraries, components
- **operating systems: run programs, manage file system & devices**
 - file systems: logical: directories and files; physical: disk blocks
- **application programs, interfaces to operating system, APIs**

Communications

- local area networks, Ethernet, wireless, broadcast media
- Internet: IP addresses, names & DNS, routing; packets
 - bandwidth
- protocols: IP, TCP, higher-level; layering
 - synthesis of reliable services out of unreliable ones
- Web: URLs, HTTP, HTML, browser
 - caching
- security & privacy: viruses, cookies, spyware, ...
 - active content: Javascript, plugins, addons
- cryptography
 - secret key; public key; digital signatures; secure hashes
- compression; error detection & correction
- wireless, cell phones, GPS, ...

Real world issues

- **legal**
 - intellectual property: trademarks, patents, copyrights, licenses
 - jurisdiction, especially international
- **social**
 - privacy, security
- **economic**
 - open source vs proprietary
 - who owns what
- **political**
 - policy issues
 - balancing individual, commercial and societal rights and concerns

Things to take away

- **some skills, some specific technical knowledge**
 - how computers and communications work today
 - what's ephemeral, what's likely to still be true in the future
- **improved numeracy / quantitative reasoning**
 - what makes sense, what can't possibly make sense, and why
 - plausible estimates, engineering judgment, enlightened skepticism
- **another way of thinking**
 - how do things work?
 - how *might* something work?
 - you can often figure it out
- **some appreciation of tradeoffs & alternatives**
 - you never get something for nothing
- **some historical perspective**
 - everything derives from what came before
- **informed opinions about the role of technology**

Final exam (watch the web page for updates)

- Exam will be emailed to you early on Wed Dec 15
 - must be returned by Mon Dec 20, 5 PM EST in person / email / pony express
 - Q/A session 4:30 Sunday Dec 12
- similar to midterm but twice as long
- open book, as with midterm:
 - open notes, book, problem sets, labs, old exams, ...
- see instructions on web site

- I'm usually looking for something brief that shows that you understand or can reason
- if you're writing or calculating a lot, you're likely on the wrong track
- questions try to test understanding of basic ideas
 - meant to be simple and straightforward, if you understand
 - not meant to be tricky or rely on obscure facts
- think about plausibility and where I'm likely coming from
- if it still seems ambiguous, say "I'm assuming this..." and carry on

What should be different next time?

- **faster or slower?**
- **more topics or fewer?**
- **broader or deeper?**
- **different topics?**
 - like what?

- **how did the problem sets work out?**
 - how would you improve them?
- **how did the labs work out?**
 - how would you improve them?

- **what else would make it better next time?**