

## STS 321: Introduction to Science, Technology, and Society

Course site: [HTTP://321.SMAGULA.NET](http://321.SMAGULA.NET)

[Science, Technology, and Society](#) program

University of Texas at Austin

Unique #44735

Tuesdays and Thursdays 5:00 - 6:30 p.m.

Parlin Hall Rm. 104

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512/ 527-1994 days

512/ 912-8252 evenings

Office Hours

Email or phone to set up a time

### DESCRIPTION

Through readings, discussions, and hands-on projects this course explores some of the roles that technology plays in our culture and society. Brief introductions to the origins of writing and to the optical and mechanical technologies of the Renaissance will provide us with the language and concepts to help us analyze more recent technologies such as the computer, the graphical user interface, and the Web. The bulk of the course will be devoted to the study of the human, political, and social dimensions of emerging Internet-based technologies, including blogging, IPTV, BitTorrent, wikis, and mobile devices.

The course has three segments. We begin inside the mind's eye, and end the course outside, interacting with others in the world.

#### ❖ Seeing and understanding

This segment takes place inside the mind's eye—how do we make sense of the information we see?

- A history of information design
- How should we communicate information?
- What are recent developments in information visualization?
- Build a Renaissance style perspective machine

#### ❖ Making with Symbols

When we write, program a computer, or design a user interface we are *doing and making with symbols*.

- Origins of symbol use and counting
- Origins of the graphical user interface
- Learn how the Web was really invented in 1948
- Doing with symbols is user interface design
- How do computers actually work?
- Build a Turing machine from toilet paper and post-its

#### ❖ Interacting with the World

This segment takes us out into the world, where we frequently interact

with the world and with each other via devices and software. What are the basic principles and laws that govern these interactions?

- The cognitive psychology of human-computer interaction
- Social networks and social software
- Outbreak of cooperation or increased monitoring and surveillance?
- Does the future need us?

Readings include a history of information design, an introduction to the simple ideas that make computers work, analyses of the “social life of information”, the emergence of “smart mobs,” and an introduction to the principles of user-centered design. The course ends with a final project that asks students to collaborate with [Austin Free Net](#) to research, design, and execute a project that seeks to empower the East Austin community via technology.

Along the way, we'll explore the interchange between technology and various fields including art, architecture, design, and commerce, and psychology.

Several hands-on activities give students a chance to experiment with technologies of the past and present:

- Using an engraving by Albrecht Durer, a wooden frame, string, and tape, construct a Renaissance-style ‘perspective machine’ and compete against another team to create a realistic drawing using it
- Using toilet paper, post-its, and a die, build Alan Turing’s “Turing Machine.” Execute a simple program on it (provided)
- Using blogging and wiki tools, create Web-based journals and collaborative Web sites on topics that relate to the course

This course requires students to make regular short entries in a web-based journal (a blog), to collaborate on the course wiki, to deliver a team presentation about a text of the group’s choice, and to complete the final project.

Together we’ll explore questions such as:

- ❖ How do past and present technologies shape our culture and society?
- ❖ What are the basic concepts that make computers work?
- ❖ Might some technologies actually influence how we think?
- ❖ What makes the computational medium unique? What makes it a medium?
- ❖ How are computational media altering the practice of craft and art?
- ❖ How do social, cultural, and human factors guide the design, development, and adoption of new technologies?
- ❖ What are group-forming networks, and why are they important?
- ❖ Does the future need us?

#### FIELD TRIPS & GUESTS

Depending on scheduling, we may be able to make a trip to the Harry Ransom Center to view their collection of ancient Sumerian counting tablets and cones, and we may also have the chance to visit a product design studio and see the tools, processes, and people who give form to consumer electronics. I’ll invite colleagues

in the human factors and software industries to provide their perspectives and experiences.

#### PREREQUISITES

While no prior technical knowledge is required other than the basics of using a personal computer and a Web browser, a willingness to learn and teach yourself new concepts, techniques, and skills is essential. Scripting, programming, and markup language experience is welcome, but *not* required.

#### REQUIREMENTS AND GRADING

Students will be required to attend each class, complete the weekly readings in advance, maintain a Web-based journal, and complete homework on time.

I will sometimes ask students to describe a question or issue they found particularly provocative in that day's reading. So please come to each class ready to contribute a question or issue.

There will be a collaborative mid-term project, and an individual final project.

#### GRADES WILL BE BASED ON

- Attendance (mandatory) and class participation (30%)
- Blogging and participating in Memex wiki (20%)
- Homework assignments and mid-term presentation (20%)
- Final Project (30% and required to receive a passing grade)

#### FINAL PROJECTS

The 2006 project will involve [Austin Free Net](#), a non-profit organization that empowers East Austin residents to become more self-sustaining through technology. One concept we have in mind is to have students create an "Internet Television Station" (a site that serves an RSS feed with hi-resolution video enclosures) that would provide blogging or video blogging instruction to Austin Free Net subscribers. Another concept is to divide the class into several teams: some teams create a video or animation that traces the route a single packet of data takes through the Internet backbone as it runs through East Austin, and other teams would walk along the backbone, talking about the Internet with the people they meet. The details of this project are still being worked out, and will be finalized as soon as possible.

#### Photocopy Packet (available at University Duplicating Services in The Union)

Excerpts from:

- ❖ *How Writing Came About*, Denise Schmandt-Besserat (University of Texas Press, 1992)
  - ❖ *Alpha to Omega: The Life and Times of the Greek Alphabet*, Alexander and Nicholas Humez (Godine, 1981)
  - ❖ *Secret Knowledge: Rediscovering the Lost Techniques of the Old Masters*, David Hockney (Viking Studio, 2001)
  - ❖ Lawrence Wechsler, "The Looking Glass" *The New Yorker*, Jan. 31 2000 (p. 64-75)
  - ❖ Vannevar Bush, "As We May Think" *The New Yorker*, 1948.
  - ❖ Douglas C. Englebart, "Augmenting Human Intellect: A Conceptual Framework" Stanford Research Institute, October 1962.
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## Required Texts

- ❖ *Envisioning Information*  
Edward R. Tufte (Graphics Press, 1997)
- ❖ *The Design of Everyday Things*  
Donald A. Norman (Doubleday, 2000)
- ❖ *Smart Mobs: The Next Social Revolution*,  
Howard Rheingold, (Perseus Publishing, 2002)

## Optional books

- ❖ *The Pattern on the Stone*  
Daniel Hillis (Basic Books, 1998)
- ❖ *The Weblog Handbook: Practical Advice on Creating and Maintaining your Blog*,  
Rebecca Blood (Perseus Publishing, 2002)

## Mid-term Presentations

In groups of 2-3, choose a text from the list below to analyze, summarize, and criticize. Present findings to the class and lead a group discussion afterwards.

### Technology and Society

- ❖ *Linked: How Everything Is Connected to Everything Else and What It Means*  
Albert-Laszlo Barabasi, (Harvard Business School Press, 2000)
- ❖ *The Social Life of Information*  
John Seely Brown, Paul Duguin (Harvard Business School Press, 2000)
- ❖ *The Trouble with Computers: Usefulness, Usability, and Productivity*,  
Landauer (MIT Press, 1995)
- ❖ *Why Things Bite Back: Technology and the Revenge of Unintended Consequences*,  
Edward Tenner, (Knopf, 1996)
- ❖ *Turtles, Termites, and Traffic Jams: Explorations in Massively Parallel Microworlds*  
(*Complex Adaptive Systems*)  
by Mitchel Resnick (MIT Press, 1997)
- ❖ *The Pattern on the Stone*  
Daniel Hillis (Basic Books, 1998)

### Human-Computer Interaction

- ❖ *Life on the Screen: Identity in the Age of the Internet*, Sherry Turkle (Simon & Schuster, 1995)
- ❖ *Interface Culture: How New Technology Transforms the Way We Create and Communicate*, Steven Johnson

## CLASS POLICIES (THE FINE PRINT)

### Intellectual Honesty

Unless properly cited as the work of another, all work submitted must be your own. If you have questions about whether to acknowledge a source or how to do so, please discuss this with the instructor. Plagiarism is dishonest, dishonorable, and unfit for the classroom.

### Concerns and Improvements

Please let your instructor know if there are ways he might improve the course, the materials, or his teaching methods. The instructor is here to learn, too. I would be especially grateful for any sort of feedback you might have about readings, activities, and projects so that I can improve the curriculum.

### Public nature of Web-based publishing

Please be aware that your blog and wiki entries will be publicly accessible and indexed by search engines, spiders, and spam-bots eager to capture your email address. Hint: one way to fool a spam-bot is to type your email address such that it requires human interpretation: stefan [at] smagula.net