Computer Science E-1: Introduction to Personal Computers and the Internet
Harvard University
Spring 1999

Syllabus

Instructor

David Malan
malan@fas.harvard.edu
(617) 493-4629

Synopsis

The Internet, World Wide Web, Java, HTML, browsers, search engines, newsreaders, e-mail, ISPs, modems, microprocessors, RAM, cache—what is it all about? This course is an introduction to computer technology and terminology currently affecting us all. Through weekly lectures and hands-on sections, we will demystify computer technology and make sense of the jargon so that students acquire a general understanding of these concepts.

No prior computing experience is necessary to take this course. However, basic typing skills are helpful. The course is designed to accommodate the most novice of computer users as well as intermediate users. If you are interested in discovering how computers work, in understanding what the Internet is, and in learning how to make your own Web site, then you are qualified to take this course.

Expectations

You are expected to attend all lectures and all sections, complete 11 homework assignments, take two hourly exams, and produce a final project.

Grades

Your final grade will be determined according to the criteria below.

Homework assignments	40%
Hourly Exam #1	20%
Hourly Exam #2	20%
Final project	20%

The course will be graded on a curve.

Course Web site

This course will utilize a Web site to convey course-wide announcements, to facilitate course-wide and section-based discussions, to publish electronic versions of assignments and handouts, to provide links to online resources, and to distribute software.

The address of the course's Web site is `http://www.courses.fas.harvard.edu/~cscie1`.

Be sure to visit this site frequently to check for announcements
and to participate in online discussions.

Books

The following are required texts. Weekly readings will be assigned from these texts.
All of these books are available for purchase at the Harvard Coop.
Copies of each are also on reserve at Grossman Library.

Information Technology: The Breaking Wave, 1st ed.
written by Curtin, Foley, Sen, and Morin
published by Irwin McGraw-Hill, 1998

How the Internet Works, 4th ed.
written by Gralla
published by QUE, 1998

The Complete Idiot's Guide to Creating an HTML 4 Web Page, 3rd ed.
written by McFedries
published by QUE, 1998

The following are recommended texts. Although not required reading, these books may assist in your comprehension of course material and serve as valuable reference materials after the course's completion. All are available for purchase at the Harvard Coop. Copies of each are also on reserve at Grossman Library.

How Computers Work, 4th ed.
written by White
published by QUE, 1998

How Macs Work, 2d ed.
written by Rizzo and Clark
published by QUE, 1996

HTML for the World Wide Web: Visual QuickStart Guide, 4th ed.
written by Castro
published by Peachpit, 1998

HTML: The Definitive Guide, 3rd ed.
written by Musciano and Kennedy
published by O'Reilly, 1998

Lectures

Lectures will be held weekly, with some exceptions,
on Tuesdays from 5:30 P.M. until 7:30 P.M. in Science Center A.

On at least two occasions, we will be joined by individuals from the
Information Technology industry. In particular, guest lectures will be
given on 23 March 1999 and 11 May 1999, following the hourly exams.

Sections

Sections are an integral part of this course, as they will provide you with an opportunity to work
hands-on with computers and the Internet in a small-class setting with a teaching fellow. Sections
will be held weekly, with some exceptions, on various nights during the week, from either 5:30 P.M.
until 7:30 P.M. or 7:35 P.M. until 9:35 P.M. Section time will be divided, usually, into two parts. The
first part of each section will take place in a classroom, in which you will discuss and review the
week's lecture and reading materials with your teaching fellow. The second part of each section
will take place, with one exception, in a computer lab, in which your teaching fellow will lead
hands-on exercises. The amount of time spent in the classroom and in the computer lab will
vary from week to week. As the semester progresses, however, progressively more time
will be spent in the computer lab.

On 2 February 1999, you will sign up for a section during lecture period.

Sections will start meeting during the week of 9 February 1999.

Homework assignments

Short assignments will be distributed weekly in lecture and will be due by the beginning of section
the following week, with a few exceptions. If you miss a lecture, you are responsible for obtaining
the week's assignment from a fellow student, your teaching fellow, or from the course Web site,
where all assignments will be posted electronically.

If, for personal reasons, you cannot meet the due date for an assignment, you should contact your
teaching fellow in advance of that due date to arrange for an extension. If you submit an
assignment past its due date without having received an extension, your score on that assignment
will be lowered by 10 percentage points for each week that it is late.

When computing your final grade, we will drop your lowest homework score.

Hourly exams

This course will have two hourly exams. The first hourly exam will take place during the first half of lecture period on 23 March 1999 and will cover lecture and reading materials from 2 February 1999 through 16 March 1999. The second hourly exam will take place during the first half of lecture period on 11 May 1999 and will cover lecture and reading materials from
6 April 1999 through 4 May 1999.

Review sessions for the hourly exams

During the week of 16 March 1999, your teaching fellow will spend time in section reviewing material in preparation for Hourly Exam #1. During the week of 4 May 1999, your teaching fellow will spend time in section reviewing material in preparation for Hourly Exam #2.

To supplement these in-section reviews, the teaching fellows will also hold a course-wide review session for Hourly Exam #1 on Saturday, 20 March 1999, from 2:00 P.M. until 4:00 P.M. in Science Center A. On Saturday, 8 May 1999, they will hold a course-wide review session for Hourly Exam #2 from 2:00 P.M. until 4:00 P.M. in Science Center A. Attendance at these course-wide review sessions is optional but encouraged.

Final project

Your final project will involve designing your own Web site and publishing it on the Internet. The project will be due by 7:30 P.M. on 25 May 1999. Additional details on this project will be provided during a lecture in April.

Workshops

How do I copy and paste? How do I print? How do I run programs? How do I open files and folders? How do I delete files? How do I create folders? How do I open, close, minimize, and maximize windows? What's the Apple Menu? What's the Start Menu? What's the Chooser? What's the Network Neighborhood? What's A: and C:? How do I copy files? How do I format a disk? What...? How...?

During the first few weeks of the course, the teaching fellows will offer two-hour workshops on basic usage of Macintosh and Windows computers on various weekends. At these workshops, you will become acquainted with the fundamentals of the Macintosh and Windows operating systems. The skills that you will take away from these workshops will serve you throughout the semester and will continue to prove helpful after the course's conclusion.

Attendance at these workshops is optional but encouraged. The specific dates and times of these workshops will be announced during either lecture or section.

Mac versus PCs

This course is designed to be independent of particular computing platforms. Hence, it does not matter if you are a user of Macs or PCs. All of the software taught and used by this course is available for both platforms in some form.

Taking the course for no credit?

If you are not taking the course for credit, you will not be required to hand in the homework assignments, take the hourly exams, or produce a final project. However, all of the work in the course is designed to facilitate your comprehension and retention of lecture materials. As such, you are very much encouraged to complete as much of the work as possible. In return, your teaching fellow will correct and comment on any work that you submit.

Schedule

2 February 1999

Lecture topics this week. Overview of the course. How to get the most out of the course's texts and Web site. Introduction to the Internet. Clients and servers. Internet services: e-mail and the World Wide Web. Getting a Harvard e-mail account and accessing it via Telnet. Getting on the Web.
Required reading due by lecture this week. None.
Recommended reading for lecture this week. None.
Section activities this week. None.
Homework due by section this week. None.

---

9 February 1999

Lecture topics this week. More about the Internet: FTP, ListServs, and USENET newsgroups. More on Web browsing: URLs, HTTP, searching, file types, and downloading. Netiquette.
Required reading due by lecture this week. *Information Technology:* Preface, Chapters 1, 2, and 9 (only though page 195). *How the Internet Works:* Introduction, Chapters 1, 16, 17, 18, 23 (only through page 129), 25 (only through page 145), and 29.
Recommended reading for lecture this week. *How Computers Work*: Chapters 34 and 36.
Section activities this week. Learning to use the Harvard computer systems. Sending and receiving e-mail.
Homework due by section this week. Assignment 1: "The Internet, Part I." Obtain your own FAS account.

---

16 February 1999

Lecture topics this week. Even more about the Internet. How does it work physically? Local-area networks (LANs) and wide-area networks (WANs). IP addresses and hostnames. Domain Name System (DNS). Backbones and ISPs. Routers. Ethernet devices. Modems. Firewalls.
Required reading due by lecture this week. *Information Technology:* Chapter 9 (pages 196 through 215). *How the Internet Works:* Chapters 2, 4, 7, 10, 24, 42, and 45 (only through page 269).
Recommended reading for lecture this week. *How Computers Work*: Chapters 24, 32, and 33. *How Macs Work:* Chapters 28 and 29.
Section activities this week. Surfing the Web.
Homework due by section this week. Assignment 2: "The Internet, Part II."

---

23 February 1999

Lecture topics this week. Introduction to computer hardware. How does a computer work? What's inside? Digital versus analog. Bits and bytes. Buses. CPUs. RAM. ROM. Overview of input/output (I/O) devices and peripherals.
Required reading due by lecture this week. *Information Technology:* Chapters 3 and 4.
Recommended reading for lecture this week. *How Computers Work*: Chapters 1, 2, 3, 4, 5, 6, 8, 10, and 11. *How Macs Work*: Chapters 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 18, and 19.
Section activities this week. Searching the Web effectively. Subscribing to ListServs.
Homework due by section this week. Assignment 3: "The Internet, Part III."

---

2 March 1999

Lecture topics this week. More about computer hardware. Storing data: floppy disks, hard drives, and CD-ROM and DVD drives. Monitors. Types of computers: desktop, laptop, and palmtop. Price and features of computers today. What to look for when buying a computer.
Required reading due by lecture this week. *Information Technology:* Chapter 5.
Recommended reading for lecture this week. *How Computers Work:* Chapters 12, 13, 14, 16 (only through page 105), 17, 20, 21 (but only pages 150 through 153), 22, 25, and 28. *How Macs Work:* 16, 17, 18 (but not pages 110 and 111), 20, 21, 25, and 26.
Section activities this week. Shopping online for computer hardware and more.
Homework due by section this week. Assignment 4: "Hardware, Part I."

---

9 March 1999

Lecture topics this week. Introduction to computer software. Operating systems: DOS, Linux, Mac OS, Unix, and Windows. User interfaces: graphical user interfaces (GUIs) and character-based interfaces (CBIs). Types of software: commercial, freeware, and shareware. Downloading software from the Internet.
Required reading due by lecture this week. *Information Technology:* Chapter 6.
Recommended reading for lecture this week. None.
Section activities this week. Dissecting a computer and looking inside.
Homework due by section this week. Assignment 5: "Hardware, Part II."

---

16 March 1999

Lecture topics this week. More about computer software. Word processing. Desktop publishing. Spreadsheets. Databases. Software licensing. Cracking, hacking, and piracy. The Y2K problem.
Required reading due by lecture this week. *Information Technology:* Chapters 7 and 8.
Recommended reading for lecture this week. None.
Section activities this week. Reviewing for Hourly exam #1.
Homework due by section this week. Assignment 6: "Software, Part I."

---

23 March 1999

Hourly Exam #1 and Guest Lecture #1 during lecture period.

Required reading due by lecture this week. None.
Recommended reading for lecture this week. None.
Section activities this week. Word processing and formatting documents.
Homework due by section this week. None.

---

30 March 1999

Spring break. No lecture or section this week.

---

6 April 1999

Lecture topics this week. Introduction to multimedia: graphics, sounds, and video. Multimedia software and file formats.
Required reading due by lecture this week. *Information Technology:* Chapter 10. *How the Internet Works:* Chapters 37, 38, and 41.
Recommended reading for lecture this week. *How Computers Work:* Chapters 29 and 30. *How Macs Work:* Chapter 23. *HTML 4 for the World Wide Web:* Chapter 4.
Section activities this week. Handing back hourly exams. Discussing answers. Designing your own graphic with Adobe Photoshop.
Homework due by section this week. Assignment 7: "Hardware and Software, Parts III and II."

---

13 April 1999

Lecture topics this week. Introduction to HTML. Tags and attributes. Publishing Web pages on the Internet.
Required reading due by lecture this week. *How the Internet Works:* Chapters 26 (only through page 153), 27 (only through page 161), and 28. *The Complete Idiot's Guide to Creating an HTML 4 Web Page:* Introduction, Chapters 1, 2, 3, 4, and 5.
Recommended reading for lecture this week. *HTML 4 for the World Wide Web:* Chapters 1, 3, and 7.
Section activities this week. Learning to make your own Web pages.
Homework due by section this week. Assignment 8: "Multimedia."

---

20 April 1999

Lecture topics this week. More about HTML. Incorporating frames, images, image maps, and tables into Web pages. Bringing Web pages to life with animation, sound, and video.
Required reading due by lecture this week. *How the Internet Works:* Chapter 30. *The Complete Idiot's Guide to Creating an HTML 4 Web Page:* Chapters 6, 8, and 9.
Recommended reading for lecture this week. *How Computers Work:* Chapter 35. *HTML 4 for the World Wide Web:* Chapters 5, 8, and 9.
Section activities this week. Learning to make your own Web pages better.
Homework due by section this week. Assignment 9: "HTML, Part I."

---

27 April 1999

Lecture topics this week. Introduction to programming. What is a programming language? How does it work? Programming methodologies. Incorporating programs into Web pages: Java and JavaScript. Programs as viruses.

Required reading due by lecture this week. *Information Technology:* Chapter 12. *How the Internet Works:* Chapters 34 (but skip pages 200 and 201) and 47. *The Complete Idiot's Guide to Creating an HTML 4 Web Page:* Chapter 10.

Recommended reading for lecture this week. None.

Section activities this week. Learning to make your own Web pages even better.

Homework due by section this week. Assignment 10: "HTML, Part II."

---

4 May 1999

Lecture topics this week. The intersection between HTML and programming. Common Gateway Interface (CGI) programs. Online financial transactions. Cookies. Digital certificates. Parental controls. Cryptography.

Required reading due by lecture this week. *How the Internet Works:* Chapters 32, 36, 44, 48 (but skip pages 284 and 285), 49, 50, and 51. *The Complete Idiot's Guide to Creating an HTML 4 Web Page:* Chapter 15.

Recommended reading for lecture this week. None.

Section activities this week. Reviewing for Hourly exam #2.

Homework due by section this week. Assignment 11: "Programming."

---

11 May 1999

Hourly Exam #2 and Guest Lecture #2 during lecture period.

Required reading due by lecture this week. None.

Recommended reading for lecture this week. None.

Section activities this week. Incorporating JavaScript into your own Web pages.

Homework due by section this week. None.

---

18 May 1999

Lecture topics this week. Conclusion of course. Impact of information technologies on business, education, homes, and training. Personal, social, and ethical issues: privacy, security, and censorship.
Required reading due by lecture this week. *Information Technology:* Chapters 11 and 13. *The Complete Idiot's Guide to Creating an HTML 4 Web Page:* Chapters 17 and 18.
Recommended reading for lecture this week. *HTML 4 for the World Wide Web:* Chapter 17 and Appendix A.
Section activities this week. Handing back hourly exams. Discussing answers. Working on final projects.
Homework due by section this week. None.

---

25 May 1999

Final projects due by 7:30 P.M.

No lecture or section this week.