

STSC 352:
**Technological Innovation
& Business History**

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This course will explore the relationship between technological innovation and business history. By looking at a series of case studies of technologically driven firms – both U.S. and international – we will develop a more sophisticated and historically informed model of the relationship between technological, economic, legal, and political developments in the late 19th and 20th centuries.

Course Format: The course meets only once weekly and is discussion-intensive, and so attendance is particularly important. Come fully prepared to discuss the readings – a significant portion of your grade will depend on class participation. Each week students will prepare a one-page response to the reading to be turned in during class. In addition, two students will be responsible for leading discussion, summarizing the issues, and raising questions. Your final grade will be based on your class participation (30%), weekly response papers (20%), and a final paper/presentation (50%). The final papers we will be preparing throughout the semester, and you will be working with a CWiC consultant on your final presentations.

Course Readings: The books for the course are available in the Penn Book Center. The course bulkpack is available at Wharton Reprographics, located in the basement of Dietrich-Steinberg.

Course Schedule:

I Introduction

September 12: Nature of technology and innovation. Technology systems.

II Yankee Ingenuity

September 19: What was American about the individual inventor? The Patent system. Tech transfer by immigration from Europe. Role of mechanics institutes (eg, Franklin Inst.) in supporting inventors before engineering schools.

Hughes, Thomas. *American Genesis*. Penguin Books, 1989. Chapters 1-4. Available in the bulkpack.

III The American System

September 26: Guns and clocks the origins of mass production in the US. The 1851 Crystal Palace Exhibition and the role of international fairs in technology. Mass consumption; the emergence of regional and national markets and of advertising.

Hounshell, David. *From the American System to Mass Production, 1800-1932: The Development of Manufacturing Technology*. Johns Hopkins University Press, 1984.

IV Railroads

October 3: Technology and business in development of the railroad system. Key role of private financing. Financing also in textile industry. Lowell mill system.

Usselman, Steven W. *Regulating Railroad Innovation : Business, Technology, and Politics in America, 1840-1920*. Cambridge University Press, 2002.

V Edison

October 10: The importance of the technology system. Edison as the first of the new inventor/entrepreneurs; how did it change after TAE. Edisons R&D lab and his use of Wall St. and the media. IP: Edisons film trust; the GE patents on ductile tungsten.

Friedel, Robert Douglas, and Paul Israel. *Edison's Electric Light: Biography of an Invention*. 1986. Selected excerpts.

VI The Rise of the Modern Corporation

October 17: Chandler's key points as exemplified in variety of industries: oil, chemicals, steel, information/telegraph.

Chandler, Alfred D., Jr. "The Beginnings of 'Big Business' in American Industry." *The Business History Review* 33, no. 1 (1959): 1-31.

Yates, JoAnne. "For the Record: The Embodiment of Organizational Memory, 1850-1920." *Business And Economic History* 19, (1990): 172-182.

VII The Interwar Period

October 24: The new roles of the government and universities. Radio and the role of amateurs in starting it. Airplanes and air travel.

Douglas, Susan. *Inventing American Broadcasting, 1899-1922*. Johns Hopkins University Press, 1987.

Bilstein, Roger E. *Flight in America, 1900-1983: From the Wrights to the Astronauts*. Baltimore: Johns Hopkins University Press, 1984. Selected excerpts.

VIII The Go-Go Years

October 31: The emergence of a new electronics industry. Focus on semi-conductors and process technologies.

Bassett, Ross Knox. *To the Digital Age: Research Labs, Start-Up Companies, and the Rise of Mos Technology (Johns Hopkins Studies in the History of Technology)*. Johns Hopkins, 2002.

IX Venture Capital & Start-Up Firms

November 7: The VC industry and the spread of start-ups. Increased role of DoD and ARPA. Silicon Valley 101.

Gompers, Paul. "The Rise and Fall of Venture Capital." *Business & Economic History* 23, no. 2 (1994): 1-26.

X The Computer Revolution

November 14: Hobbyists and the emergence of the PC. Silicon Valley 2.0 and the PC revolution. IBM as a link to the past and as the basis for standards to facilitate innovation.

Campbell-Kelly, Martin, and William Aspray. *Computer: A History of the Information Machine*. Basic Books, 1996.

XI E-Commerce

November 21:

William Aspray and Paul Ceruzzi, eds. *The Commercialization of the Internet and its Impact on American Business* (MIT Press, forthcoming).

XII Pharmaceuticals & Biotech

November 28: The traditional strengths of pharmaceutical industry and its role in innovation. Emergence of biotech and how it changed things.

Castells, Manuel. *The Internet Galaxy : Reflections on the Internet, Business, and Society*. Oxford ; New York: Oxford University Press, 2001.

XIII Big Finish

December 5: In which all is made clear . . .

No readings.