

Internship ING4

Report

Harvard University

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1 Acknowledgement

2 Introduction

3 History

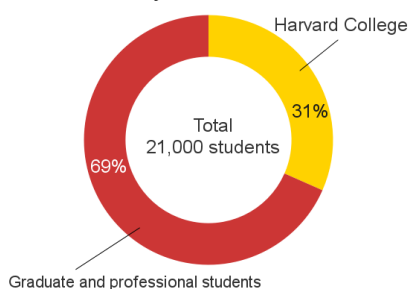
3.1 Harvard University

Harvard university is the most ancient university of the United States. It's located in Cambridge, Massachusetts, in Boston's suburb. It has been created in 1636 by vote of the Court of the Massachusetts Bay Colony. The school was named *Harvard College* in 1639, in homage to John Harvard, who had left the school *livre* 779 and his library of some 400 books. John Harvard was the first donor to the school.

During the following decades, Harvard University never ceased to grow up and it's now the richest University in the world with \$36.4 billion of endowment.



Harvard seal



Harvard university includes several universities, here is a list of the most important ones:

- Faculty of Arts and Sciences composed by
 - Harvard College
 - Continuing Education
 - Graduate School of Arts and Sciences
 - Harvard John A. Paulson School of Engineering and Applied Sciences
- Business School
- Kennedy School of Government
- Law School
- Medical School
- Radcliffe Institute
- School of Education
- Harvard T.H. Chan School of Public Health

3.2 Harvard School of Engineering and Applied Sciences

As you saw earlier "being in Harvard" without specifying which university doesn't mean much, and so, during this internship, I was affiliated to the Harvard School of Engineering and Applied Sciences, later called SEAS — Little story: the school name changed during my journey, as Mr John A. Paulson did a donation of \$ 400.000.000 to SEAS, so the school was renamed after him.

The progenitor of the School of Engineering and Applied Sciences was called *Lawrence Scientific School* and was founded in 1847. It was named for Abbott Lawrence, who donated \$50,000 (an unprecedented sum at the time) to create the institution. It was detached from Harvard College, which means it was independent financially. At this time, the School saw a diverse group of thinkers and professionals — astronomers, architects, naturalists, engineers, mathematicians, and even philosophers — pass through its doors.

At the end of the 19th century, the school suffered the "Competition" from the newly born Massachusetts Institute of Technology (MIT) — Now one of the greatest engineering schools in the world. The Harvard president of the time tried

to merge the Harvard Scientific School with the MIT, vainly.

In 1901, despite the help of Gordon McKay, the school merged with Harvard College and lost his independence.

Later, the Harvard Lawrence Scientific School became *The Division of Applied Science* and in 2007, it was re-named as the *Harvard School of Engineering and Applied Science*.

It's a new start for the School, Venkatesh Narayanamurti, Dean of Harvard School of Engineering and Applied Sciences at the time declared:

"Our transition from a Division to a School is not a departure from history—but in some sense, we are coming full circle. The Lawrence School, our progenitor, will be reborn in a new form appropriate for the 21st century."

Thus, strictly speaking, SEAS is a young school, only 8 years old, and in full growth. Thanks to the 4 million dollars given by John Paulson, the school will expand and build laboratories in Allston, the city bordering Cambridge, on the other side of the river.

In order to realise the importance of Harvard engineering school in the world of sciences, here are a few examples of inventions made here:

- in 1919, the **crystal oscillator** came out of the Harvard Engineering School's Croft Laboratory, invented by George Washington Pierce
- in 1938, the **largest cyclotron of the world** (at the time) was constructed at the Graduate School of Engineering's Gordon McKay Engineering Laboratory.
- in 1977, Bill Gates would have graduated from Harvard but he left the university to found **Microsoft**, one of the biggest companies in the world.
- in 2004, **Facebook** was born in a dorm room of Harvard housing, created by Mark Zuckerberg, it's now the biggest social network ever created

3.3 Mazur group

Harvard School of Engineering and Applied Sciences is composed of several research groups. This summer, I worked with the group of professor Eric Mazur, Balkanski Professor of Physics and Applied Physics and Area Dean for Applied Physics.

Professor Mazur founded the group in 1991 to study the dynamics of molecules, chemical reactions, and condensed matter on very short timescales — down to femtoseconds (10^{-15} second). Physics in this ultrafast regime is studied using light, specifically very short laser pulses. So the Mazur group works with femtosecond lasers.

In addition to the work in optical physics, The Mazur Group is very active in research about education. In 1990, Eric Mazur began developing Peer Instruction, a method for teaching large lecture classes interactively. He is the author of *Peer Instruction: A User's Manual* (Prentice Hall, 1997), a book that explains how to teach large lecture classes interactively.

4 Organisation

4.1 Main organisation of the university

Harvard University is huge. It

