



**Engineering empowering society**

THE DEAN'S REPORT | 2010

## Message from the Dean



**We are in a revolution** in which engineering increasingly empowers society. It reflects a convergence of disciplines, stronger and faster than ever before.

Long a symbiotic partner of the natural sciences, which needs engineering tools to probe the very small, the very distant and the very complex, engineering grabs new scientific findings to create products and processes. In medicine, engineering is at the core of new imaging, implantable devices, medicines, surgical techniques and health informatics. Virtual reality, interactive games and burgeoning new forms of digital entertainment grow at the fertile intersection of engineering and the arts, which is most visible in Hollywood. And now, the latest disciplinary convergence is on communications, social networks, economics, sociology, public policy and government, where engineering's quantitative and mathematical methodologies are focusing on the complex problems of the social sciences.

The Viterbi School has been in the forefront of this revolution with its research and an Engineering+ inspired education in undergraduate, doctoral and professional programs. This report is a true graphical representation of the convergence at the school.

A handwritten signature in black ink, which reads "Yannis C. Yortsos". The signature is written in a cursive style with a long horizontal line extending to the right.

**Yannis C. Yortsos**

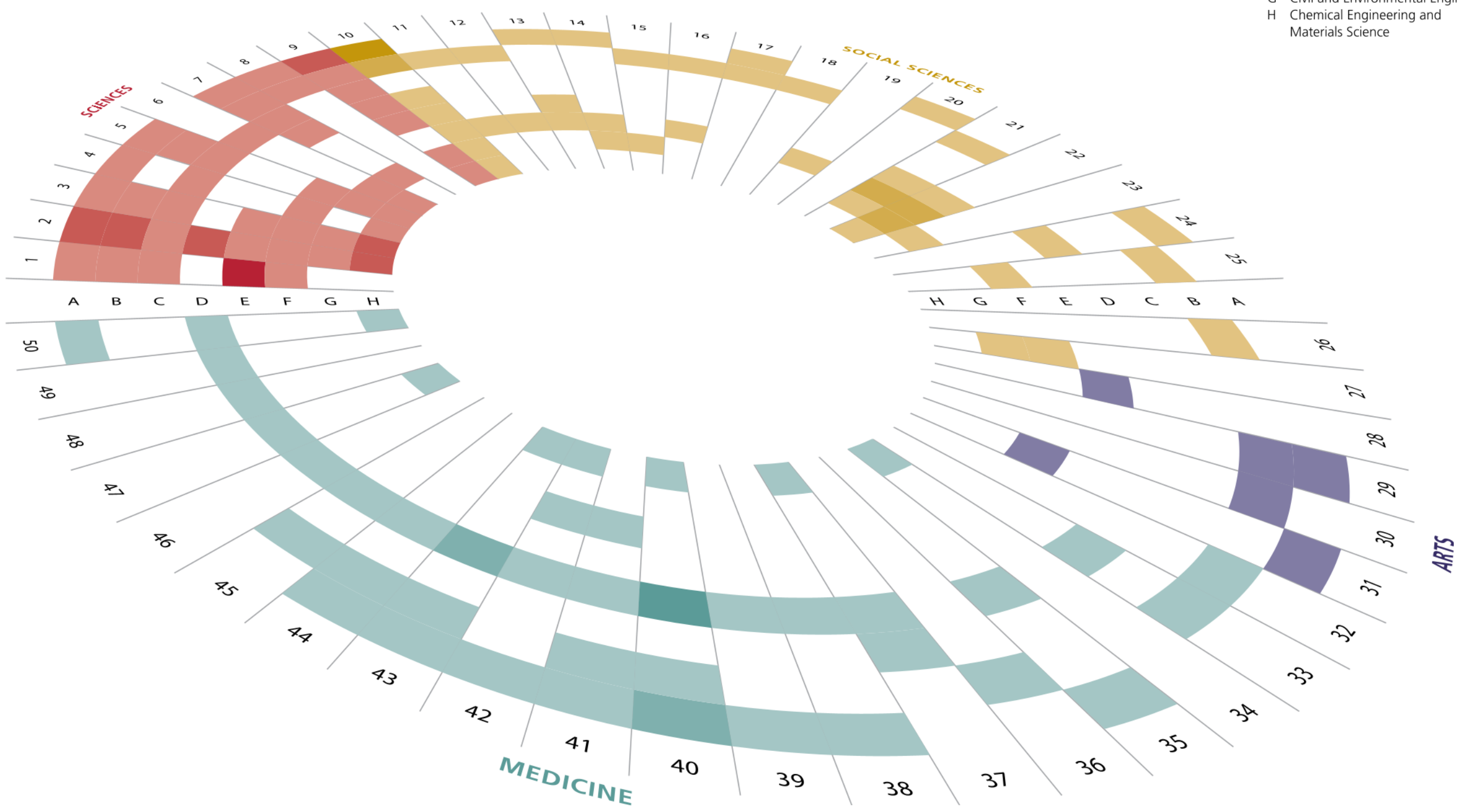
Dean, USC Viterbi School of Engineering

### On the cover

Detail of original art from the USC Viterbi Museum by Italian artist Sandro Chia

# Mapping Engineering+ at Viterbi

Engineering+ is simply Engineering + (subject). This radial graph charts the frequency of 50 non-engineering subjects (numbers) through the 8 departments (letters) in the USC Viterbi School of Engineering. The concentric ellipses establish rows and in each row is a letter for each department. The cells generated at the intersections of the numbers and the letters represent the presence of the non-engineering subjects in the research or teaching portfolios of tenured and tenure-track faculty in the departments. The more frequent the appearance of a subject, the more saturated the shade of the cell.



## Engineering

- A Electrical Engineering
- B Computer Science
- C Aerospace and Mechanical Engineering
- D Biomedical Engineering
- E Astronautical Engineering
- F Industrial and Systems Engineering
- G Civil and Environmental Engineering
- H Chemical Engineering and Materials Science

## SCIENCES

- 1 Astronomy
- 2 Biology
- 3 Chemistry
- 4 Energy
- 5 Environment
- 6 Geology
- 7 Mathematics
- 8 Neuroscience
- 9 Physics

## SOCIAL SCIENCES

- 10 Communications
- 11 Decision Analysis
- 12 Economics and Finance
- 13 Education
- 14 Emergency Response
- 15 Geography
- 16 Government & Politics
- 17 Internet Studies
- 18 Journalism
- 19 Law
- 20 Linguistics
- 21 Management
- 22 Manufacturing Base
- 23 Policy/Planning
- 24 Psychology
- 25 Safety/Security
- 26 Sociology
- 27 Urban Studies

## ARTS

- 28 Architecture
- 29 Cinema
- 30 Interactive Arts
- 31 Music

## MEDICINE

- 32 Assistive
- 33 Biokinesiology
- 34 Dermatology
- 35 Devices
- 36 Epidemiology
- 37 Genetics
- 38 Hearing
- 39 Cardiology
- 40 Imaging
- 41 Informatics
- 42 Internal/Preventive
- 43 Neurology/Psychiatry
- 44 Oncology
- 45 Orthopedics
- 46 Pediatrics
- 47 Pharmacology
- 48 Prosthetics
- 49 Surgery
- 50 Vision



# Viterbi School at a glance

## **Founded**

USC engineering began in 1905

## **Student population**

Approximately 2,100 undergraduate students and 4,000 graduate students

## **Faculty**

168 tenured and tenure-track faculty, with 52 endowed chairs and professorships

## **Academic departments**

Eight

## **Alumni**

More than 65,000

## **Education centers**

- Division of Engineering Education
- KIUEL (Klein Institute for Undergraduate Engineering Life)
- K-12 Center

## **Annual research expenditures**

More than \$160 million, with more than 45 research centers and institutes

## **Research Centers and Institutes**

### *Home to:*

- Information Sciences Institute (ISI)
- The Ming Hsieh Institute
- The Daniel J. Epstein Institute
- Two National Science Foundation (NSF) Engineering Research Centers (ERC)
  - Integrated Media Systems Center (IMSC)
  - Biomimetic MicroElectronic Systems Center (BMESC)
- University Center of Excellence of the U.S. Department of Homeland Security
  - Center for Risk and Economic Analysis of Terrorism Events (CREATE)
- Department of Energy Frontiers Research Center (EFRC)
- The National Center for Metropolitan Transportation Research (METTRANS)
- Biomedical Informatics Research Network (BIRN)
- HTE@USC (Health, Technology and Engineering@USC)
- Smart Grid Demonstration Project
- Center for Interactive Smart Oil Field Technology (CiSoft)

### *Affiliated with:*

- Alfred E. Mann Institute for Biomedical Engineering (AMI)
- Institute for Creative Technologies (ICT)
- USC Energy Institute
- USC Stevens Institute for Innovation

Engineering+

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