

**Lecture Guidelines, Classroom Rules
Homework Policy and Grading Methods**

AND

**Some Useful Principles
for Students of Engineering and Science**

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CLASSROOM RULES

- No **cell phones**
 - Turn phones off as you enter classroom
- No **talking** among yourselves
 - Even about technical matters
 - Address all questions and comments to me
- No **tardiness**
 - No admittance once door is closed
- Course language is **English**. Do **NOT** ask me
 - to give the class
 - to repeat what I said
 - your questions

in Turkish

RECOMMENDATIONS

- Take notes during class
- You should study 3 hours for each hour in class
- You may work and study in groups
- You must write your homework alone
- You must submit your homework
by the indicated deadline

OBLIGATIONS

- Absolutely **NO PLAGIARISM!**
- Learn the difference between
«Quoting», «Referencing», and «Stealing».
- Submit nothing but **YOUR OWN WORK!**
- Submit nothing but **YOUR BEST WORK!**

ATTENDANCE, HOMEWORK and GRADING POLICY

- No attendance will be taken
- Each week (except at Weeks 7 and 13) a HW will be assigned
- There will be one Midterm Exam (ME) and one Final Exam (FE)
- Both ME and FE will be take-home
- HW, ME and FE will be e-mailed to specified address
no later than the specified deadline (date and time)
- **Mails sent passed the deadline will not be graded**
(unless valid excuse is presented to the Department).
- Final Course Grade will be calculated from
$$\text{Final Grade} = 0.30*\text{HW} + 0.30*\text{ME} + 0.40*\text{FE}$$

FORMATTING for DOCUMENTS

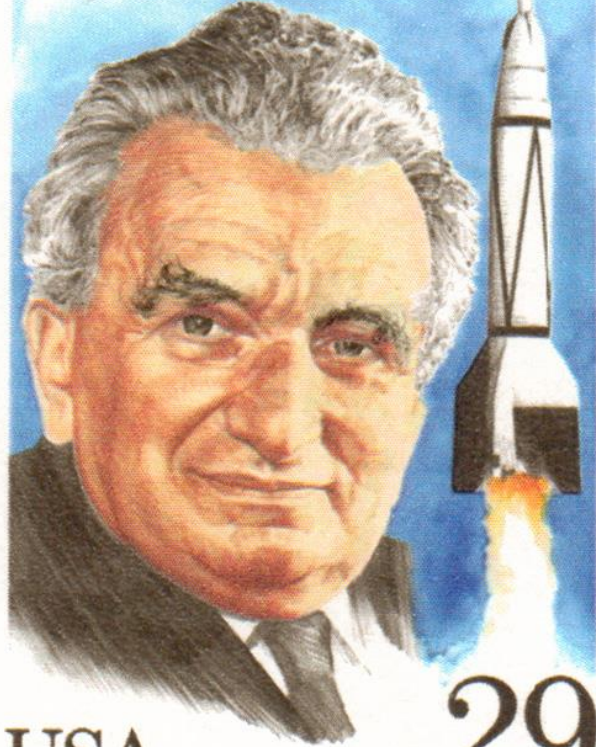
(HW, ME and FE)

- **Processor:** MS Word
- **Font:** Cambria Math
- **Size:** 14
- **Line Spacing:** 1.25 spaces
- **Margins:** 1 inch all directions
- **Length:** Max 1 page
(unless indicated otherwise)
- **Equations:** Equation Toolbox
- **Math Symbols:** Greek

MOTTOS, APHORISMS, PRINCIPLES

for the Inquisitive Mind

Theodore
von Kármán
Aerospace Scientist



USA

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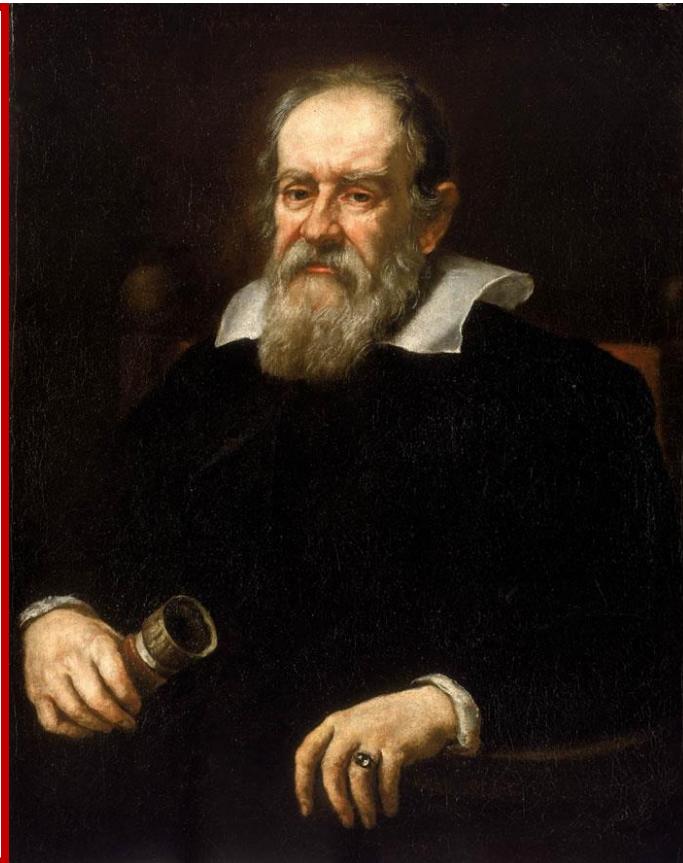
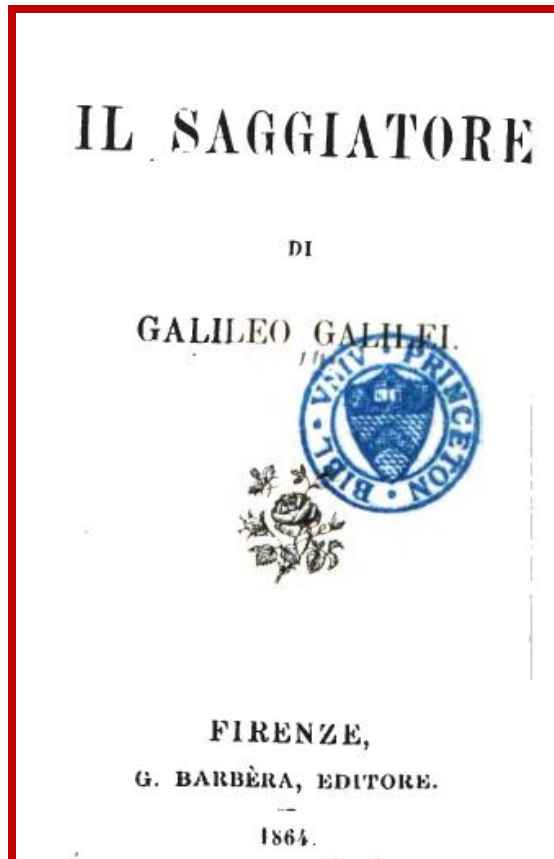
Theodore von Kármán
received the first
U.S. Medal of Science,
from President Kennedy.

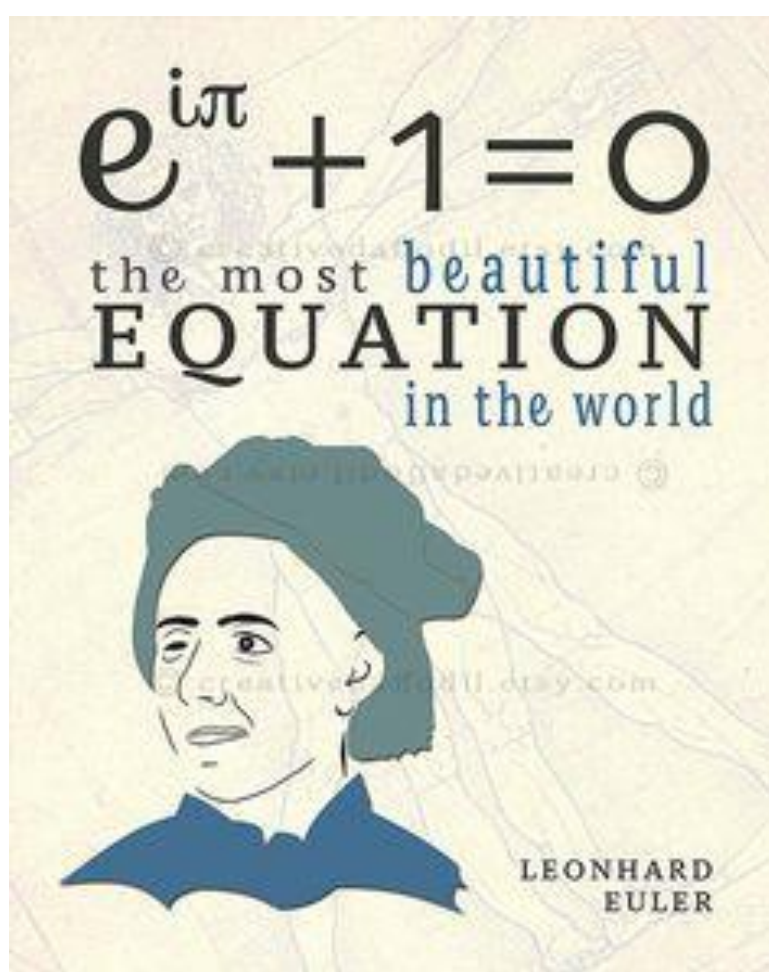
Scientists discover
what already is.

Engineers create
what has
never been.

*“God has given us two books: That of the Sacred Scriptures and that of **Nature**.*

*Natural Philosophy (i.e. Physics) is written in the latter. [...] It is written in the language of **Mathematics** [...],*





«Because the shape of the whole universe is most perfect and, in fact, designed by the wisest Creator, nothing in all of the world will occur, in which no maximum or minimum rule is somehow shining forth.»

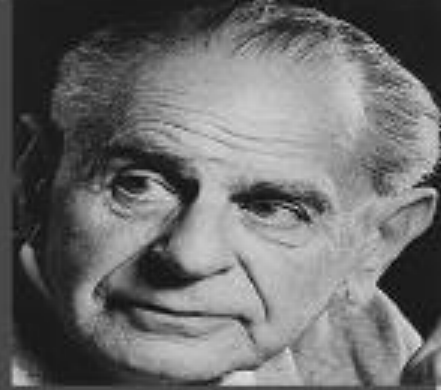
*(nihil omnino in mundo contingint,
in quo non maximi minimive ratio quapiam eluceat)*

Leonhard Euler (1707-1783)

POST-RENAISSANCE GIANTS of MATHEMATICS

Gallileo Gallilei	1564-1642	U Pisa	-	Ipse dixit (Aristotelian dogma)
Rene Descartes	1596-1650	U Poitiers	-	Cartesian Coordinates
Pierre de Fermat	1607-1665	U Orleans	-	Derivative, Local Extrema $\rightarrow \frac{dy}{dx} = 0$ Path of Least Time, Probabilities
Blaise Pascal	1623-1662	-	-	Probabilities
Isaac Newton	1642-1726	Trinity Coll. (Cambridge)	-	Calculus Celestial Mechanics
GW Leibnitz	1646-1716	Leipzig U	-	Calculus $f(x)$ Area under curve Continuity, $\frac{dy}{dx}$, $\int$
Johann Bernoulli	1667-1748	U Basel	Jacob Bernoulli	Fluid Dynamics
Leonard Euler	1707-1783	U Basel	Johann Bernoulli	Complex Numbers, Variational Calculus
Joseph L Lagrange	1736-1813	U Turin	L Euler	Variational Calculus
Pierre S Laplace	1749-1827	U Caen	J D'Alembert	Laplace Transformations
Joseph Fourier	1768-1830	E Normale	JL Lagrange	Fourier Series/Transformations
Simeon D Poisson	1781-1840	Ecole Polytechnique	Lagrange, Laplace	Probabilities
Carl G Jacobi	1804-1851	U. Berlin	-	Jacobian, $\frac{\partial y}{\partial x}$, Inverse Problem
Sir WR Hamilton	1805-1865	Trinity Coll (Dublin)	John Brinkley	Hamiltonian, `Tensor`, Quantum Mech
Lev S. Pontryagin	1908-1985	U Moscow	Pavel Alexandrov	Optimal Control Theory

Falsification



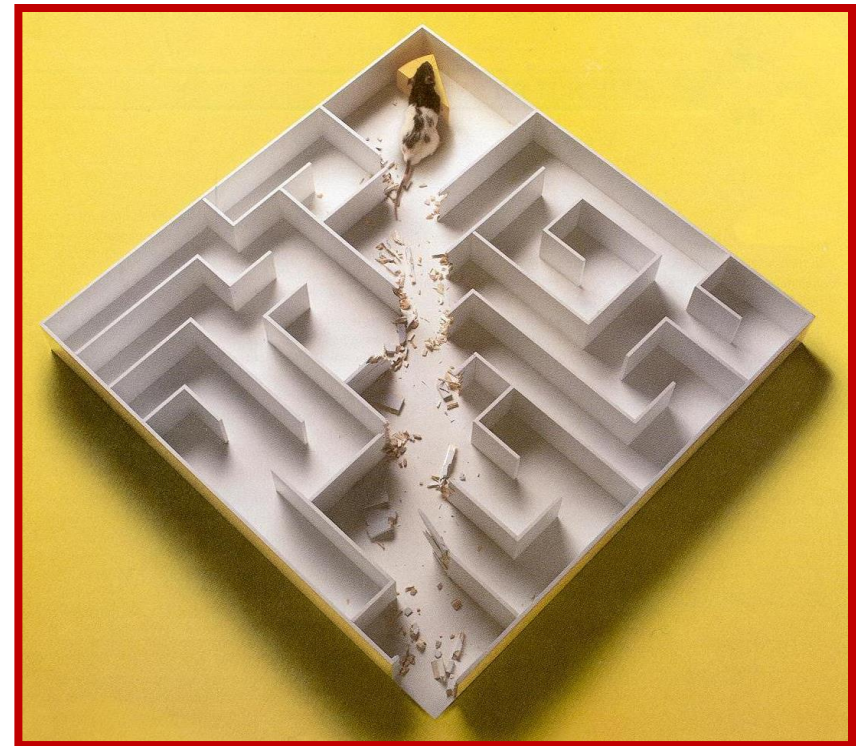
- Falsification is the refutation of a hypothesis or theory by empirical evidence
- Karl Popper:
 - Universal hypotheses are falsifiable, but not verifiable
 - "All swans are white" can be accepted as a tentative hypothesis, until the first non-white swan is sighted
 - The longer a (falsifiable) hypothesis resists falsification, the more reliable it is seen

It's either

**Through hard work
to the stars**



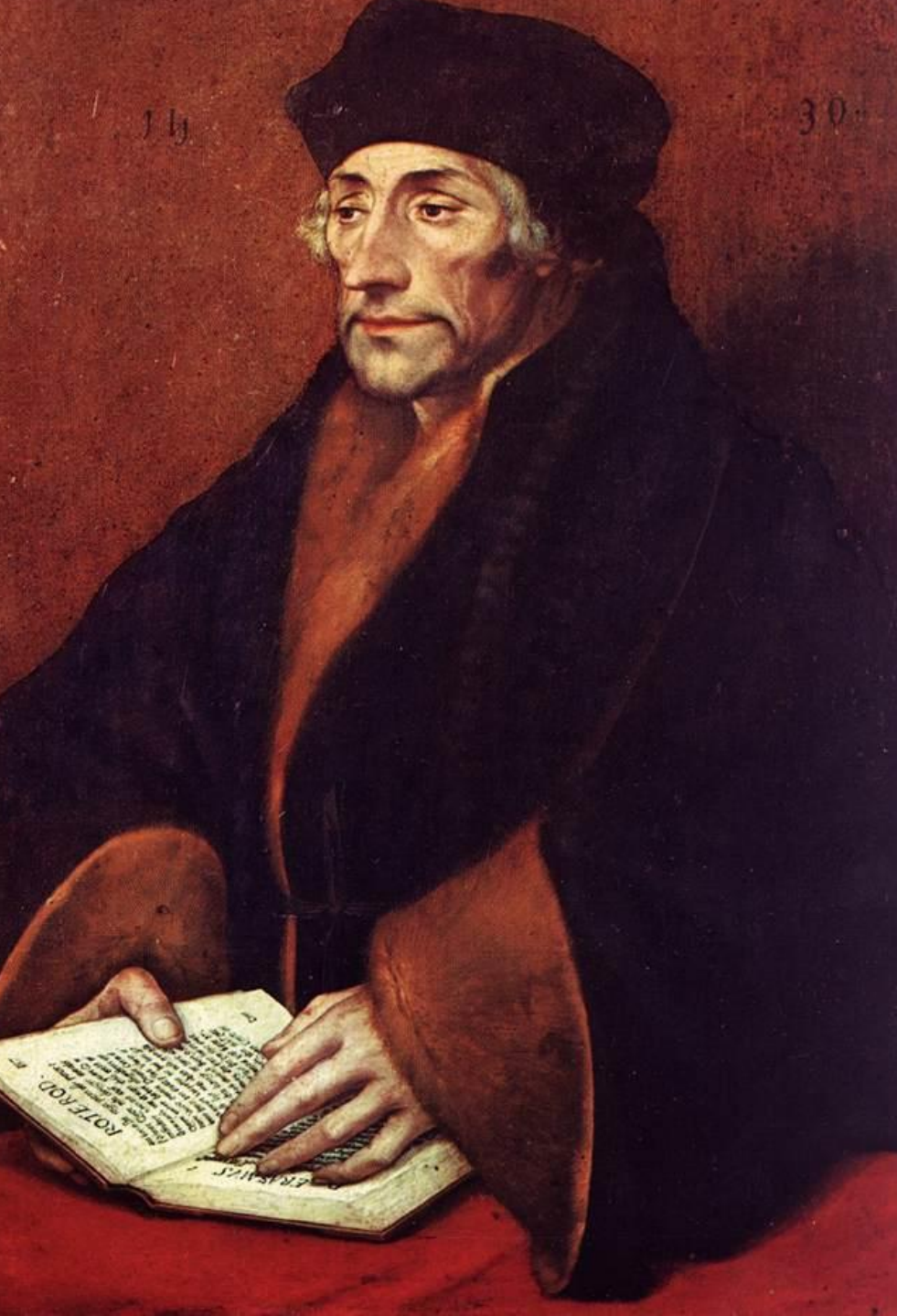
OR



**The least burdensome
path to target**



Your choice!



"Festine lente"
(Slowly hurry)



Desiderius
Erasmus
Roterodamus
(1466 –1536)

CLIMBING THE WORLD'S 14 HIGHEST PEAKS

NO SHORTCUTS TO THE TOP



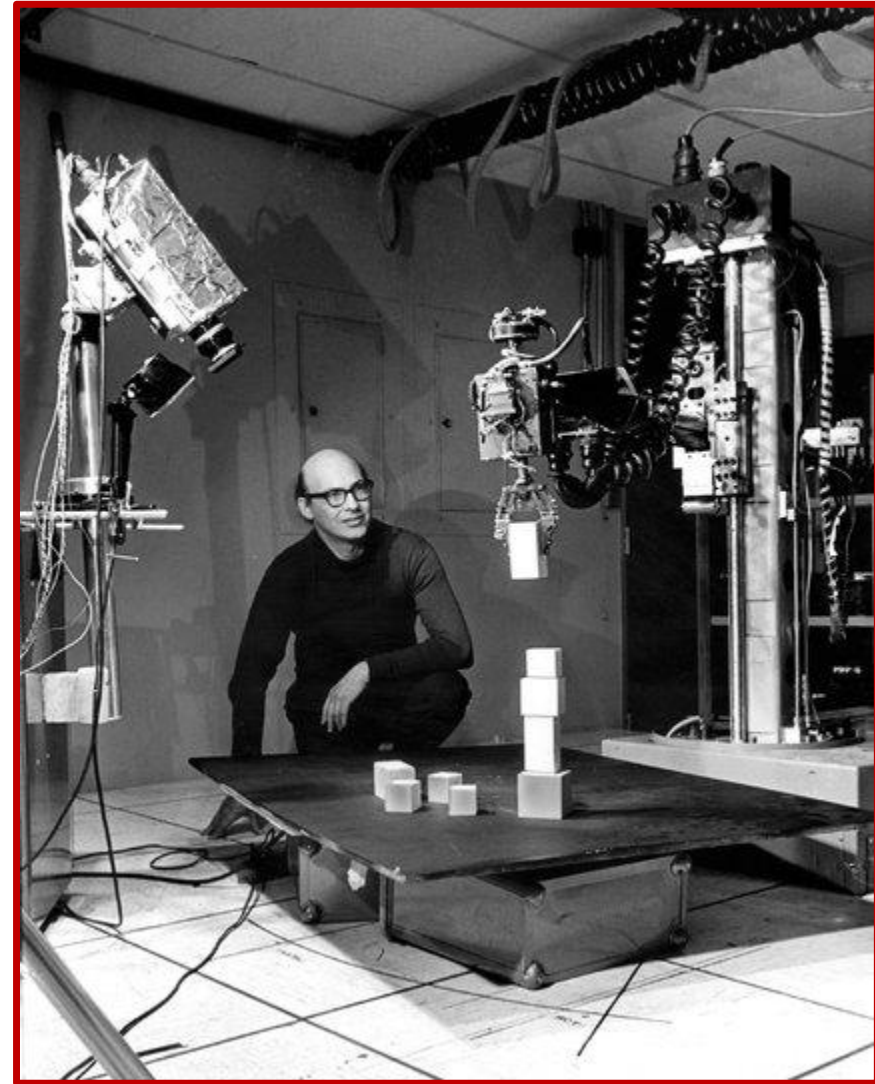
ED VIESTURS WITH DAVID ROBERTS
READ BY ED VIESTURS

«Marvin taught us how to think. [...]

He always challenged us to question the status quo.

He loved it when we argued with him»

**Danny Hillis
MIT Graduate,
Inventor, Entrepreneur**



**Professor Marvin Minsky (1927-2016)
Co-Founder, Artificial Intelligence Laboratory,
Massachusetts Institute of Technology**