Week 3

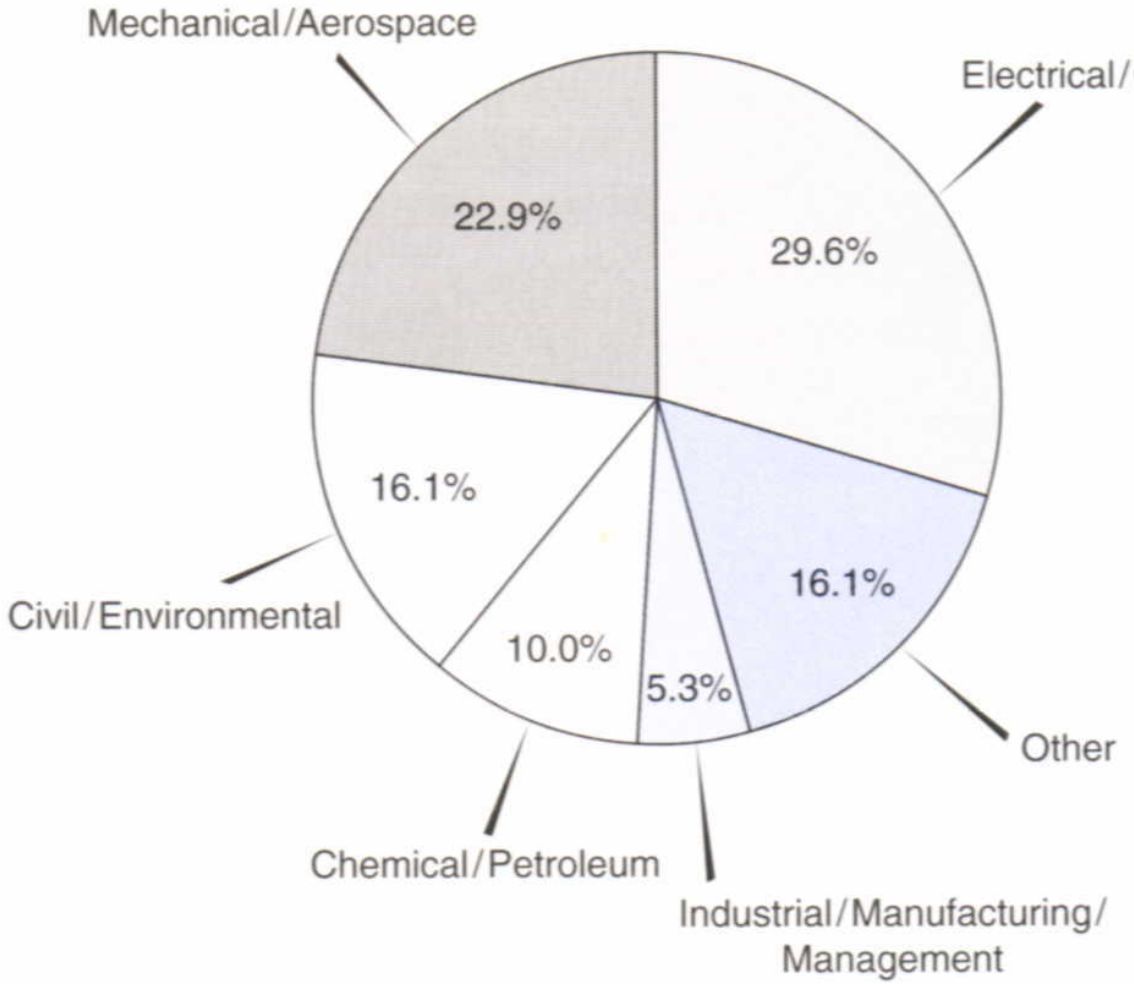
Textbook Topics Covered:

Chapter 1.3 – 1.6

Chapter 1.4
The Engineering Disciplines

Figure 1.18

Degrees by Discipline



Engineering degrees by discipline. Total degrees awarded was 59 134. (*ASEE Profiles of Engineering & Technology Colleges, 1999 Edition*)

Quoted from: Eide, Engr' Fundamentals

Aerospace Engineering

Aerospace Engineers develop:

Space Vehicles

Aerospace Engineering

Aircraft

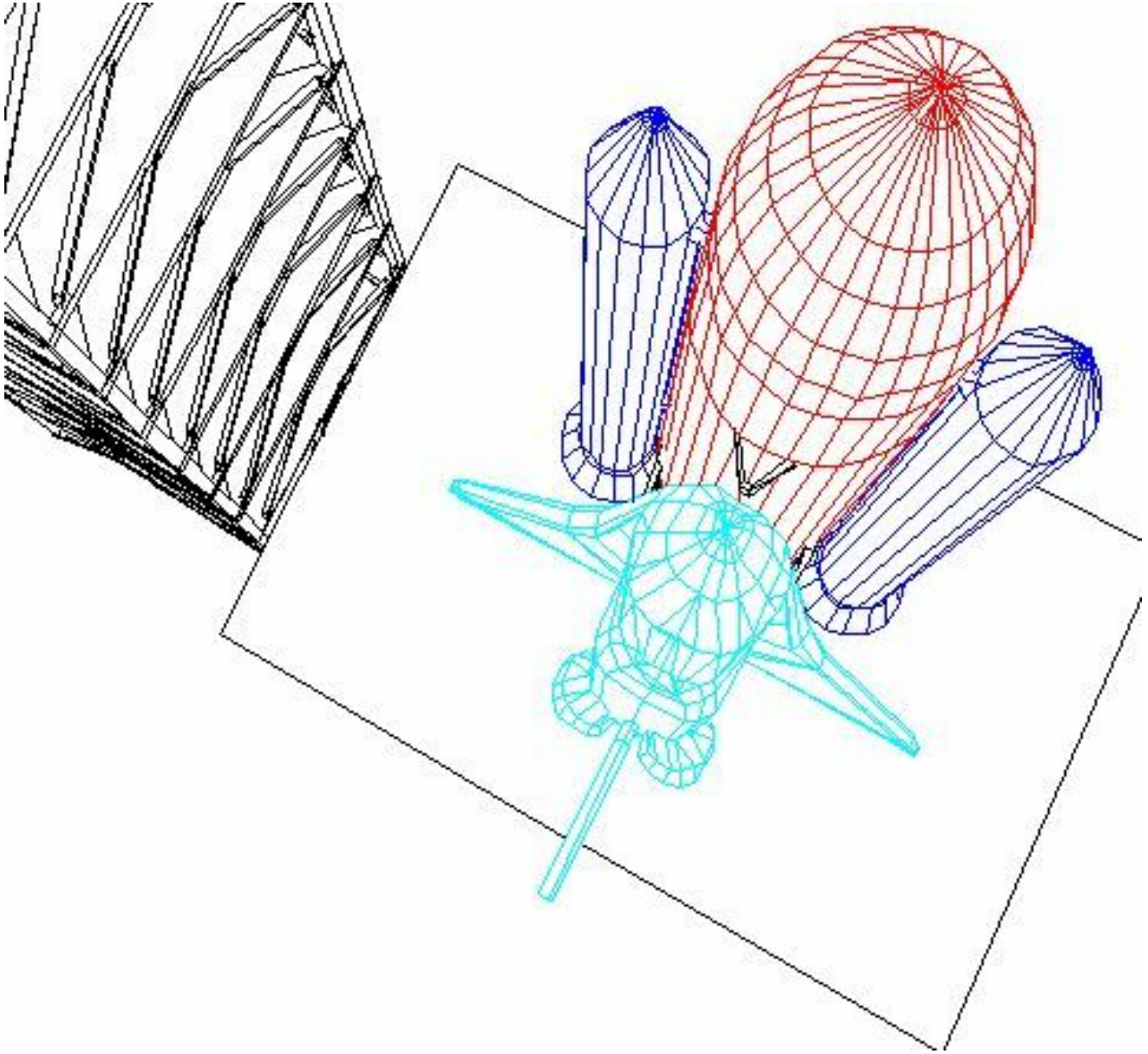
Aerospace Engineering

Turbines

Aerospace Engineering

Structures for Air and Space Vehicles

Aerospace Engineering

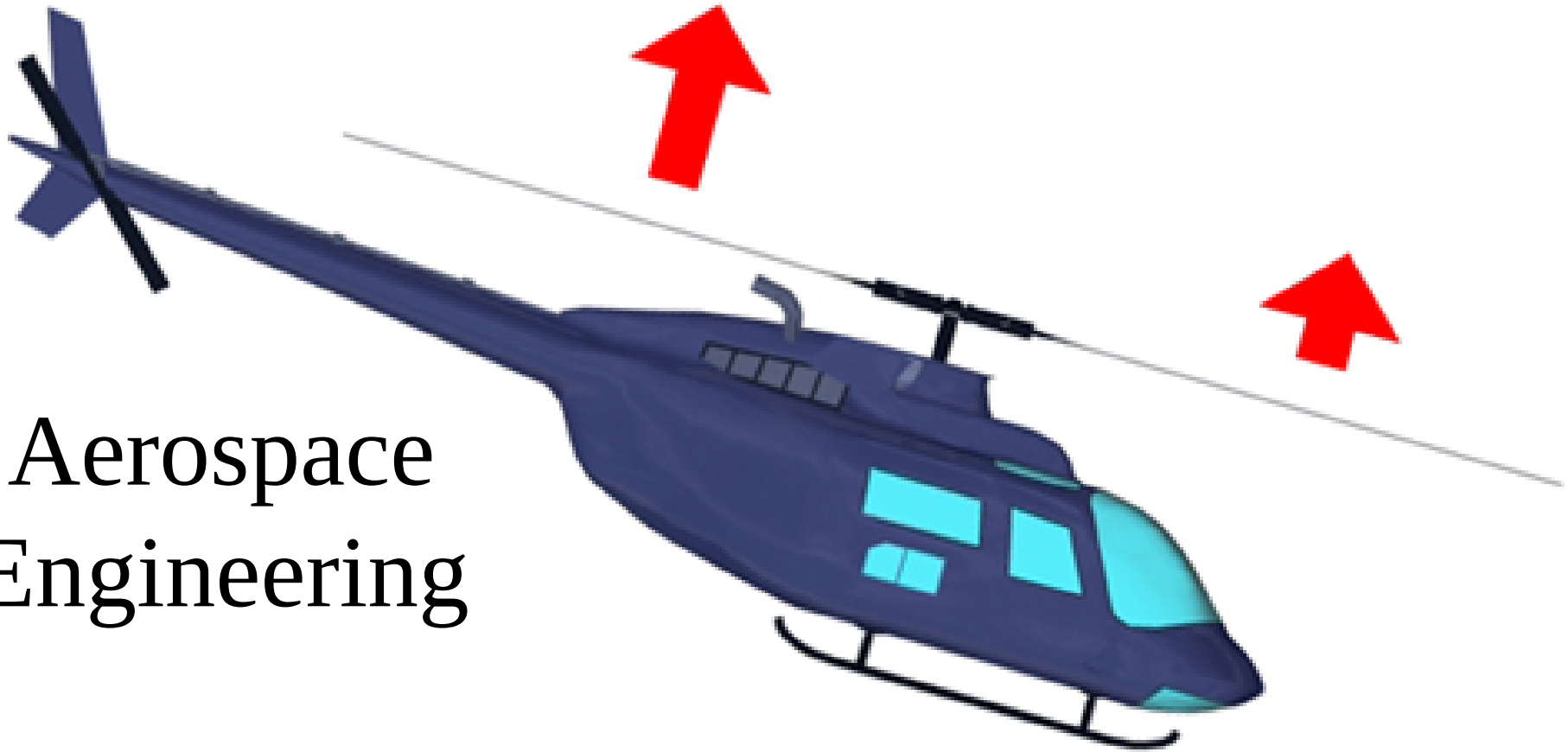


Structures: CAD Wireframe Image

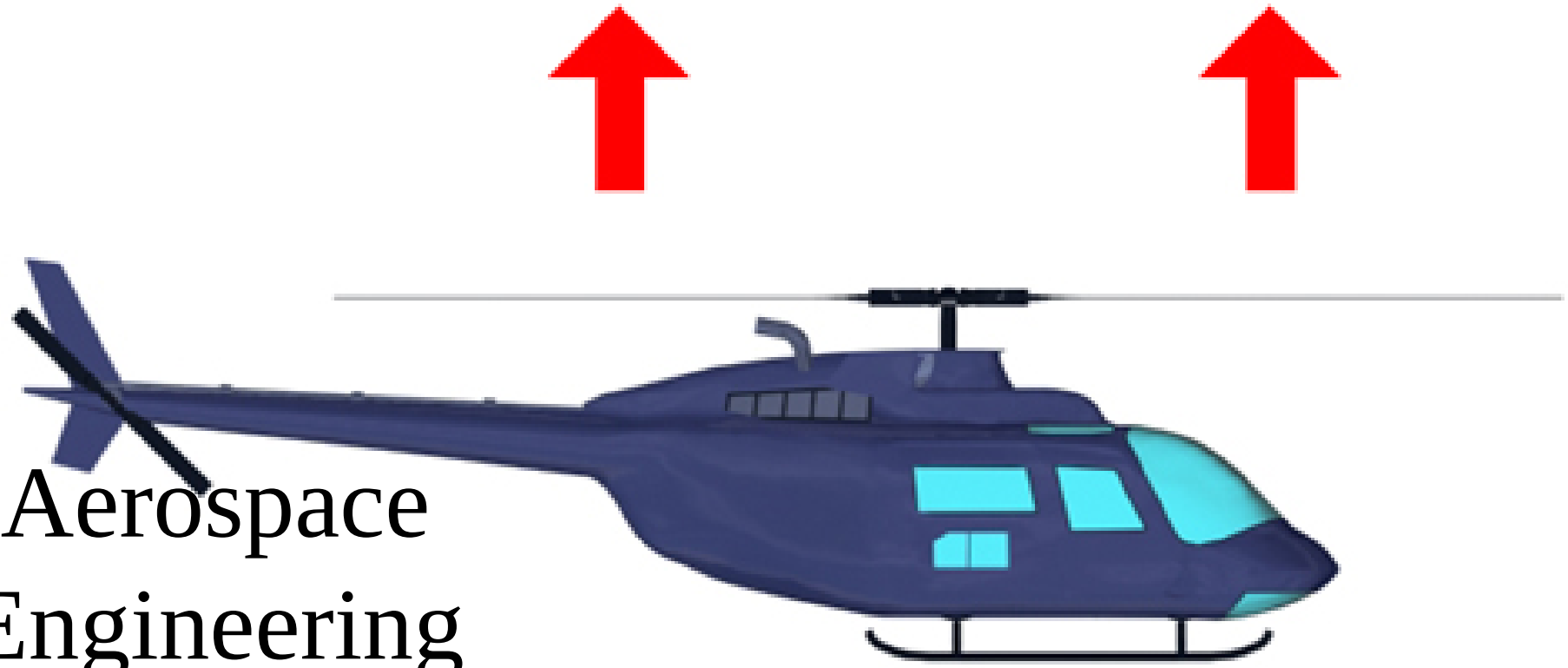
Aerospace Engineering

Air Vehicles

Aerospace
Engineering

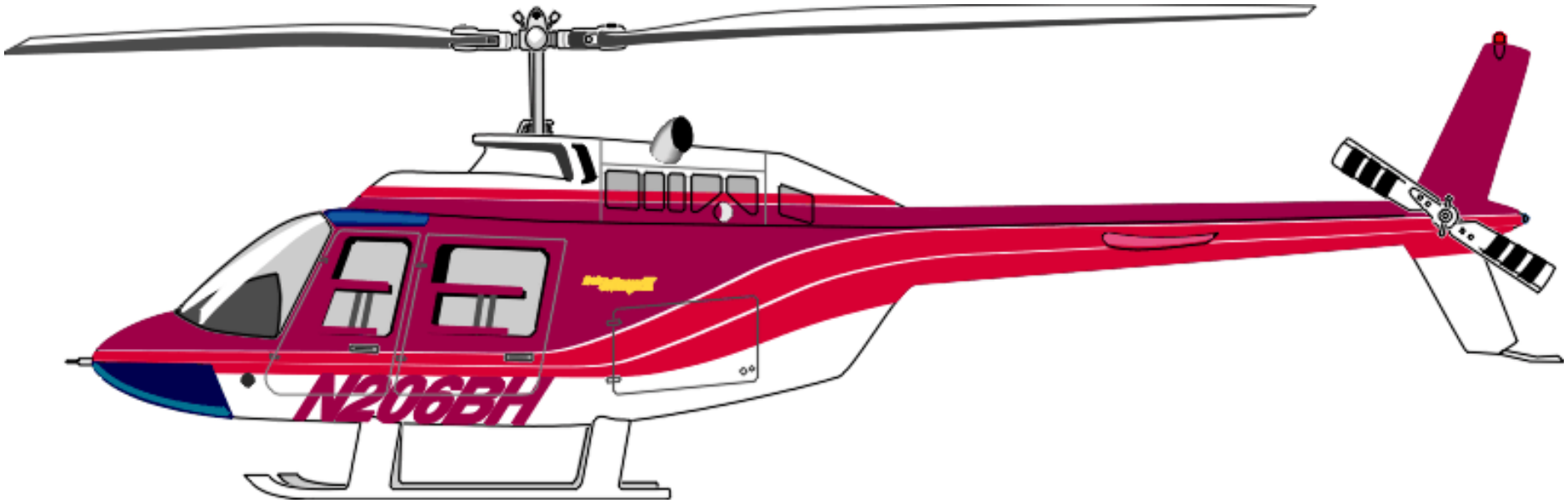


Air Vehicles: Control: Forward Motion



Aerospace Engineering

Air Vehicles: Control: Upward Motion



Aerospace Engineering

Air Vehicles: Control: Tail Rotor

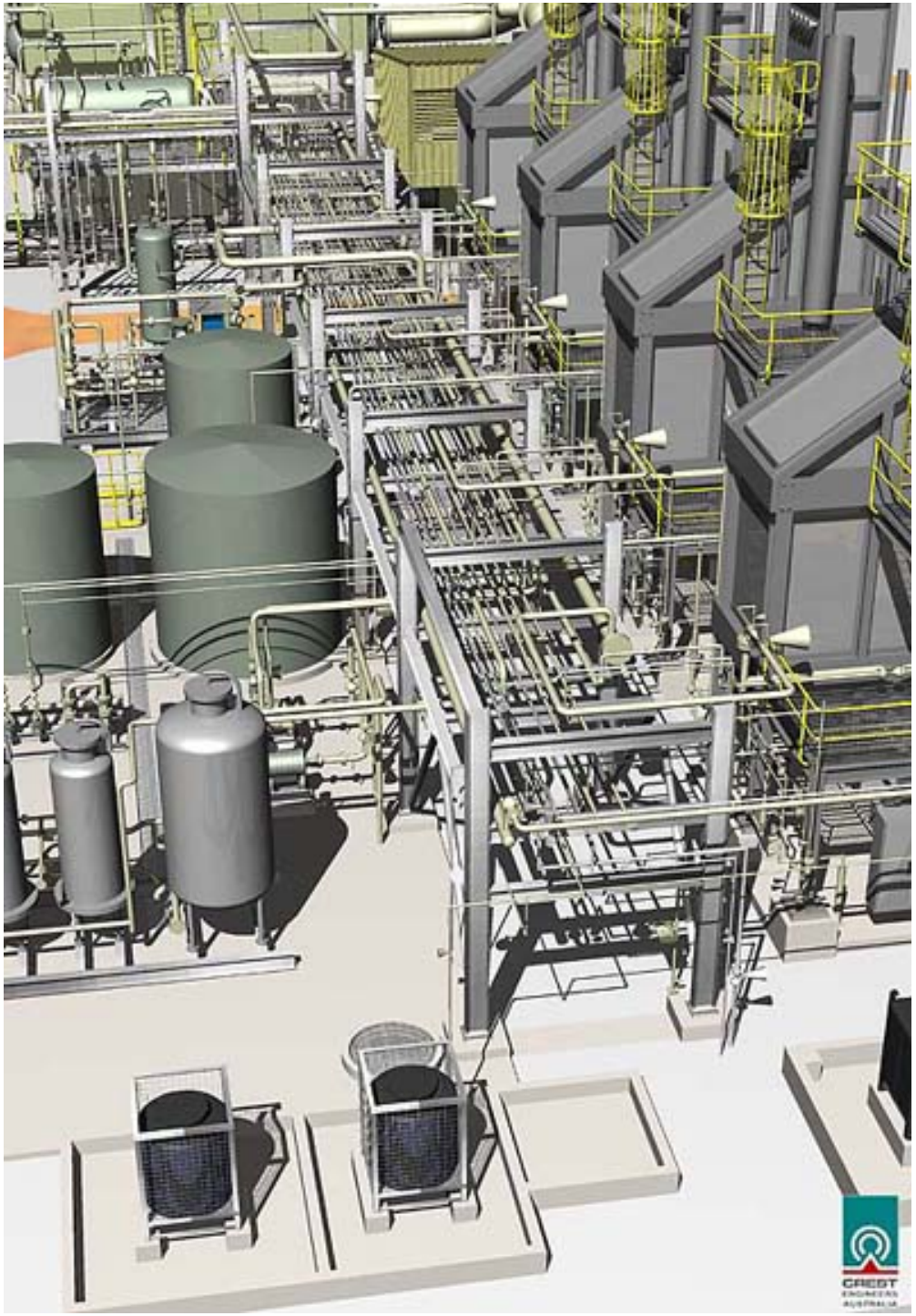
Helicopter Design must address:

1. ***Basic aerodynamics of vertical flight:*** (Established in the early 1920's)
2. ***Powerplant (engine)***
3. ***Minimizing structural weight and engine weight.***
4. ***Counteracting rotor torque reaction: Providing stability and properly controlling the machine.***
5. ***Problem of high vibrations.***

Chemical Engineering

Chemical Engineers develop and operate:

Chemical and pharmaceutical processes, plants

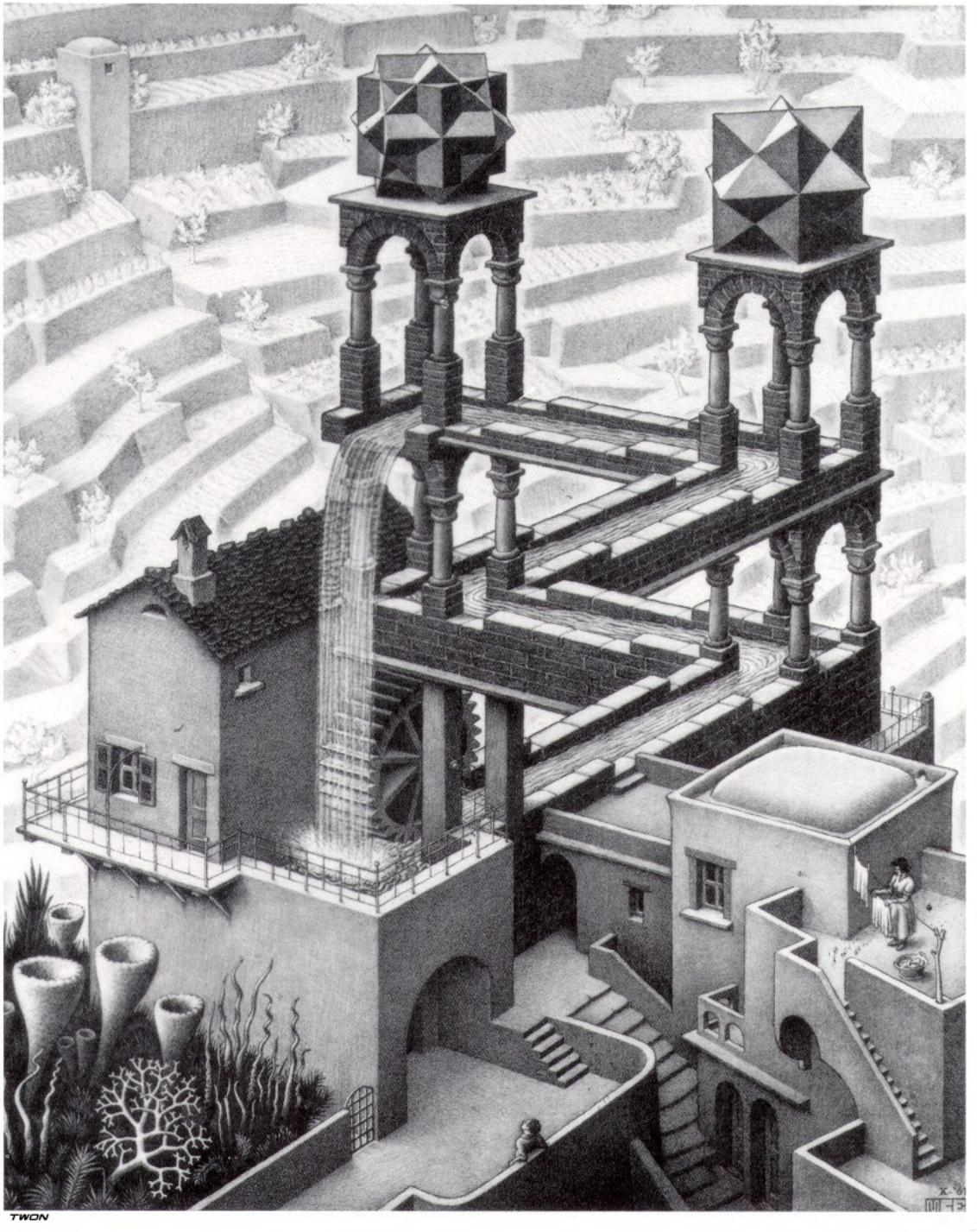



Civil
Engineering
Civil Engineers design and build:
Buildings, Roads and other
Infrastructure

Civil Engineering

Someone Please build me this one!

Maurits Cornelis (M.C.) Escher
Waterfall



Mechanical Engineering

Mechanical Engineers design and develop:

Machines, Moving Structures, Equipment

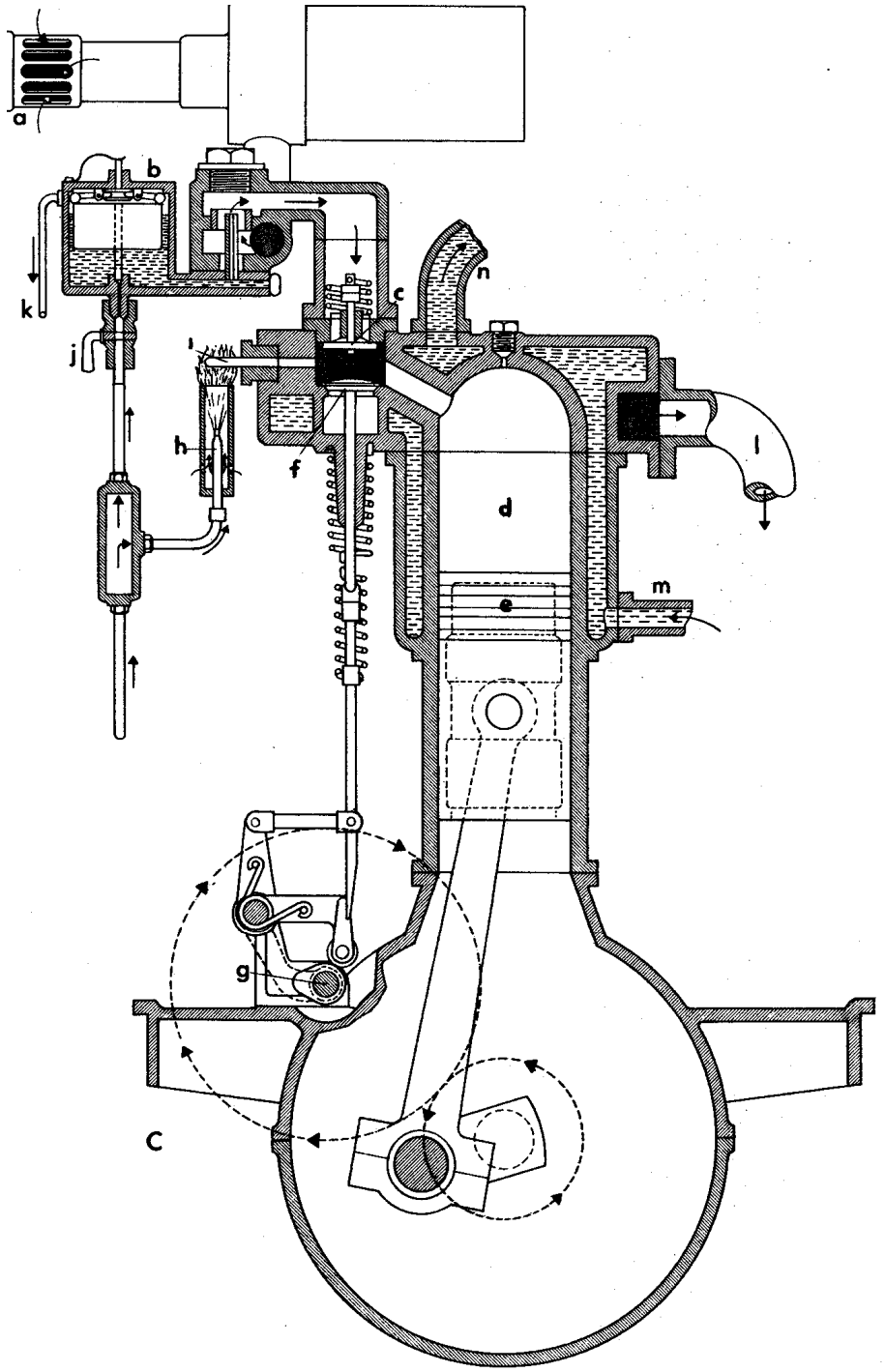
Mechanical Engineering

Example: Turbine Design

Mechanical Engineering

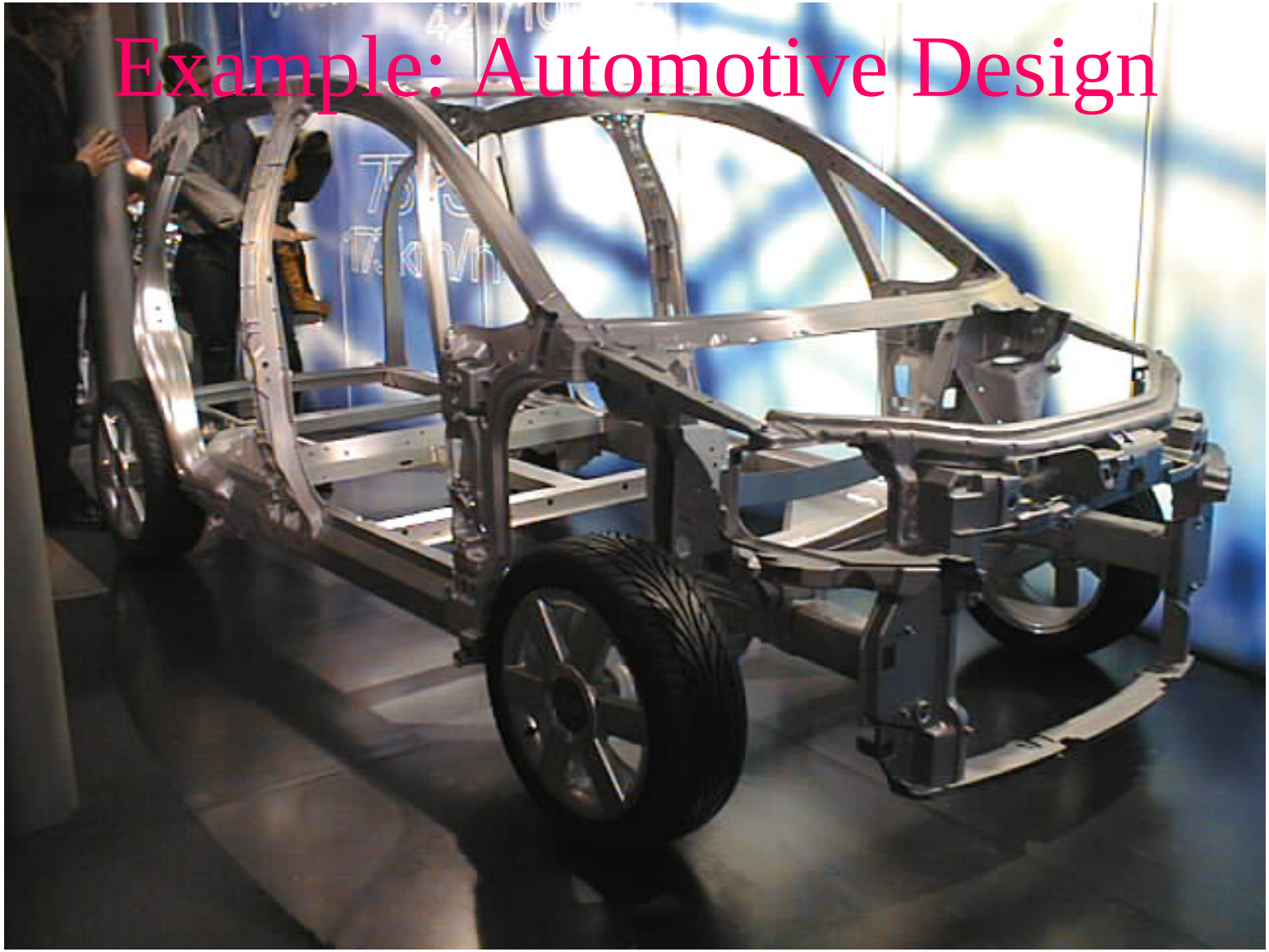
Example:
Automotive Engine Design

Gottlieb Daimler
1883



Mechanical Engineering

Mechanical Engineering



Mechanical Engineering

Mechanical Engineering

Example: Automotive Plant

Chapter 2
Engineering Education

UNLV – MEG Curriculum

See: http://me.unlv.edu/

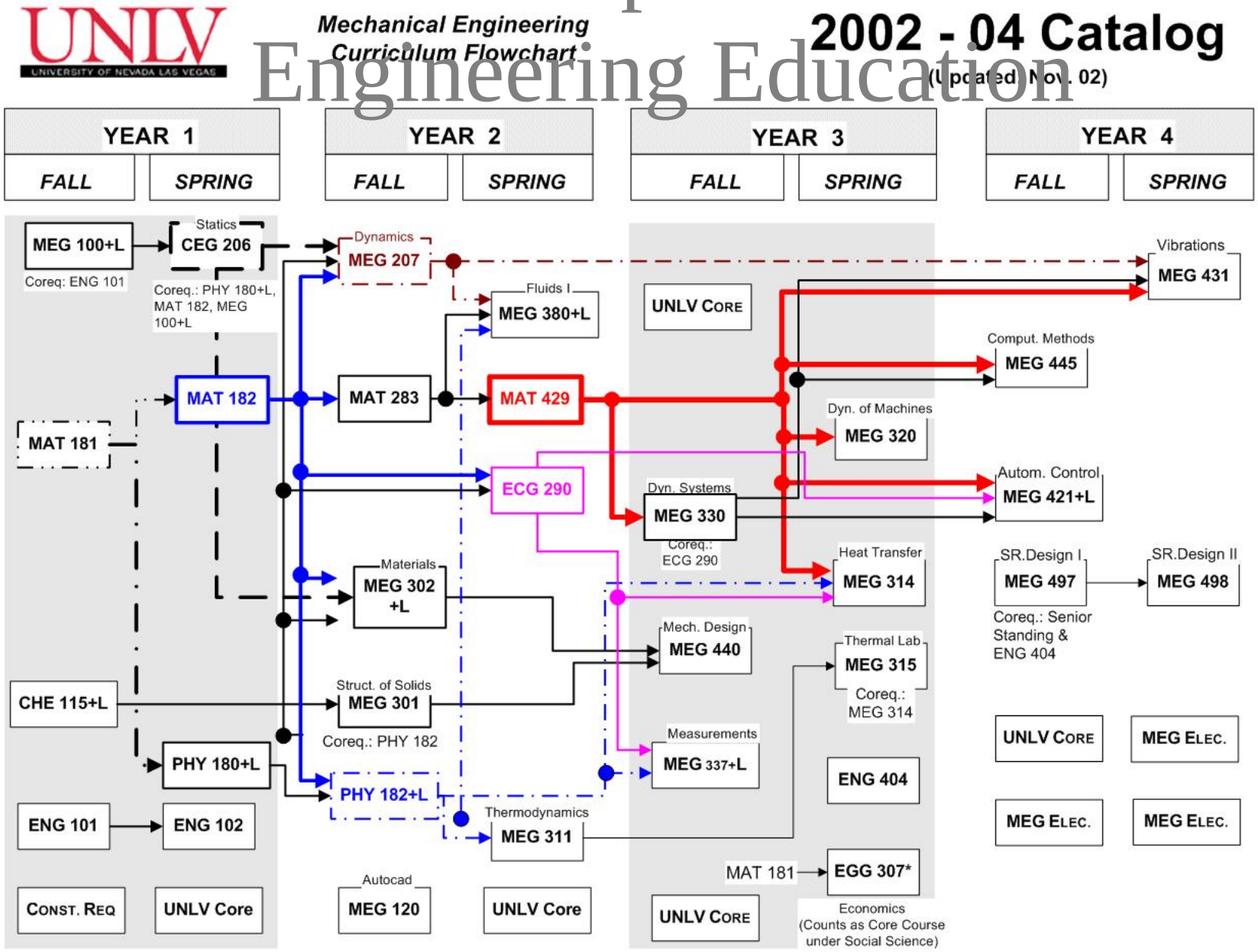
The Mechanical Engineering program at UNLV

see:

http://www.me.unlv.edu/Undergraduate/MECH08-10.pdf

Chapter 2

Engineering Education



Chapter 2
Engineering Education

UNLV – MEG Curriculum

See: http://www.me.unlv.edu/

Degree Requirements

Mechanical Engineering Pre-Major:

English Comp. ENG 101 and 102..... 6 credits

Mathematics MAT 181 and 182..... 8 credits

Social Sciences/Humanities ..... 6 credits

Chapter 2
Engineering Education

Degree Requirements Mechanical Engineering Pre-Major, cont'd:

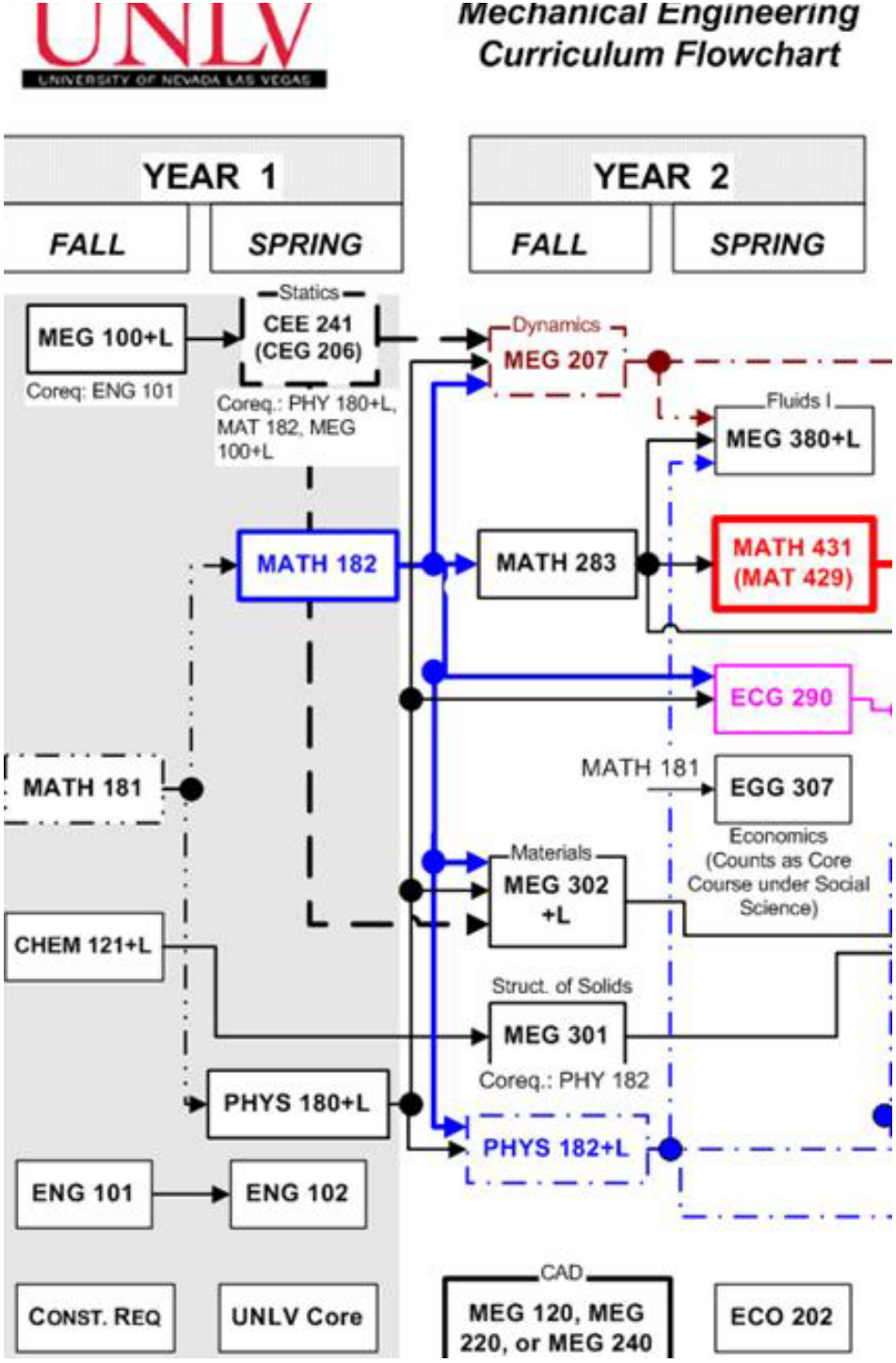
Engineering MEG 100, 100L, CEE 241; MEG 120 and 207..... 10 credits

Social Sciences/Humanities ..... 9 credits

EGG 307 (Engineering Economics), and six additional elective credits in the appropriate fields.

MEG Curriculum Years 1 and 2

Plan for Pre-requisites!

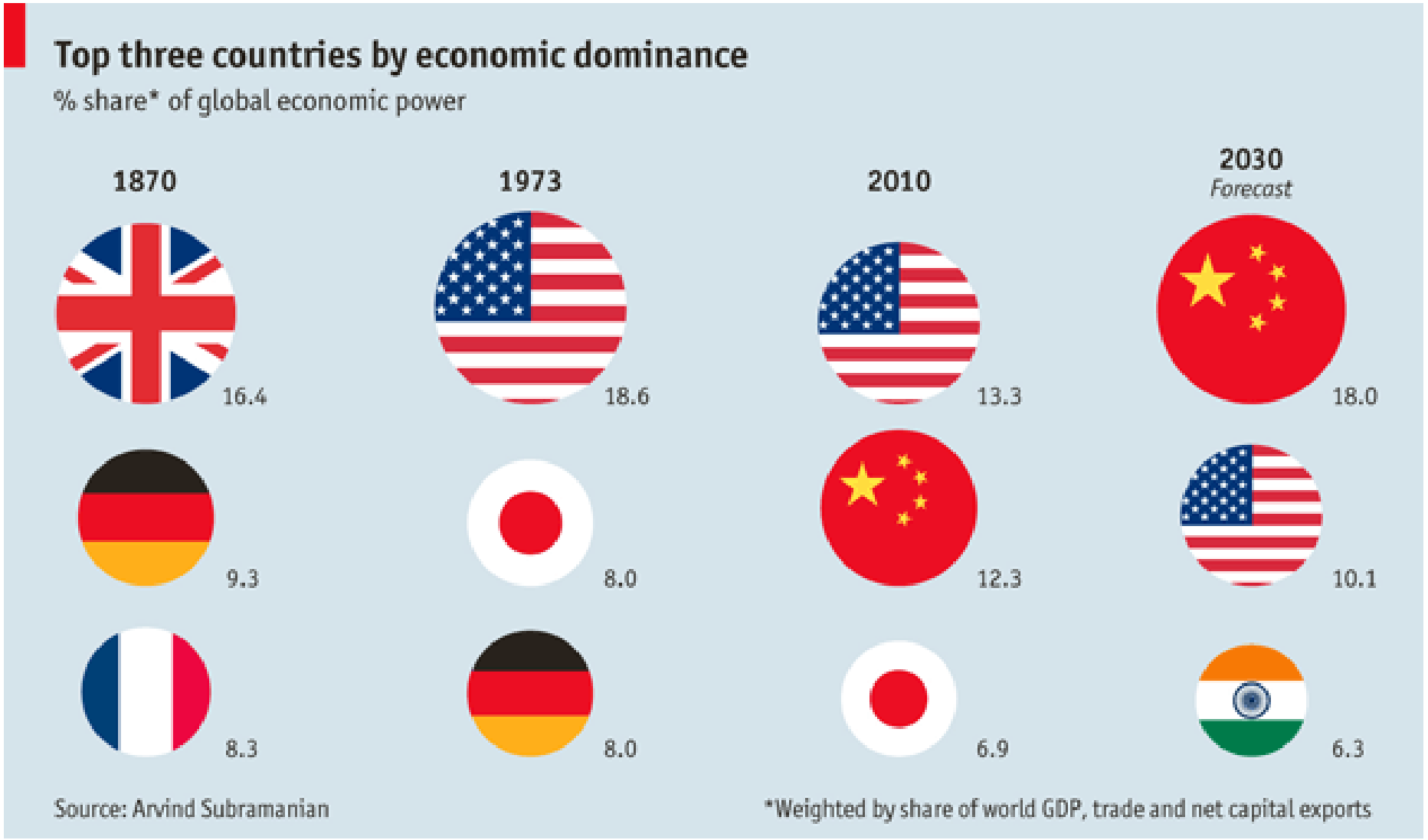


Homework assignment #3

Requirements for Professional Licensure in NV

- NV State Board of Engineers
- http://boe.state.nv.us/

Globalization



Source: The Economist, Sept. 2011

How Did the Robot End Up With My Job?

- Here is a typical evening at a major cable TV network: arrive at Washington studio and be asked to sign in by a contract security guard. Be met by either a young employee who appears to still be in college or an older person who seems to have hung on with tenure. Have your nose powdered by that person. Have your microphone attached by that person.

Source: Thomas Friedman, NYtimes, Sept. 2011

How Did the Robot End Up With My Job?

Or: Be positioned in the studio chair by that person, and then look directly into a robotic camera being manipulated by someone in a control room in New York and speak to whoever the host is wherever he or she is. That's it: one employee, a robot and you.

Source: Thomas Friedman, NYtimes, Sept. 2011

How Did the Robot End Up With My Job?

Think of how many jobs — makeup artist, receptionist, camera person, producer-director — have been collapsed into one.

Source: Thomas Friedman, NYtimes, Sept. 2011

How Did the Robot End Up With My Job?

In the last decade, we have gone from a connected world (thanks to the end of the cold war, globalization and the Internet) to a hyperconnected world (thanks to those same forces expanding even faster). And it matters. The connected world was a **challenge to blue-collar workers** in the industrialized West. They had to compete with a bigger pool of cheap labor.

Source: Thomas Friedman, NYtimes, Sept. 2011

How Did the Robot End Up With My Job?

The hyperconnected world is now a challenge to white-collar workers. They have to compete with a bigger pool of cheap geniuses — some of whom are people and some are now robots, microchips and software-guided machines.

Source: Thomas Friedman, NYtimes, Sept. 2011