

HUMAN CENTERED DESIGN

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SUMMARY OF PREVIOUS LECTURE

- Introduction to Human centered design
- Anthropometry
- Description of various dimensions of body

ANTHROPOMETRIC DESIGN PRINCIPLES

- Design for extreme individuals
- Design for adjustability
- Design for the average user
- Design different sizes for different size users

DESIGN FOR EXTREME INDIVIDUALS

- Designing for the maximum
 - Doorway heights
 - Automobile door openings
 - Mattress sizes
- Designing for the minimum
 - Heights of kitchen cabinets
 - Locations of levers and dials on equipment
 - Weights of portable power tools

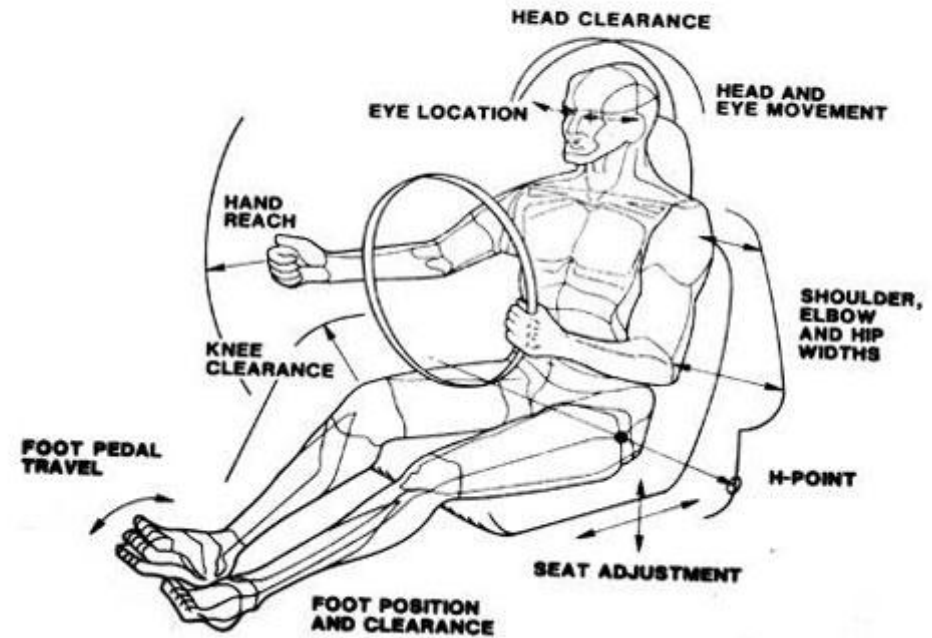
DESIGN FOR ADJUSTABILITY

- To accommodate a wide range of users
- Examples:
 - Automobile driver seats
 - Adjustable steering wheel in an automobile
 - Office chairs
 - Worktable heights
 - Tilt angles of computer monitors
 - Lawnmower handle heights
 - Bicycle handlebars

EXAMPLE

The measurements are taken with the human body dimensional co-ordinates x, y, z with respect to body land marks as reference points. at work or motion in the workspace. Typically they are represented in three dimensional co-ordinates x, y, z with respect to body land marks as reference points:

In automobile design, at first the position of the occupant/driver with comfortable driving posture on the seat is defined. Then all other components are arranged around the driver to provide easy reach, vision and control operations.



DESIGN FOR AVERAGE USER

- For situations in which design for extreme individuals and adjustability are not feasible
- Examples:
 - Stair heights
 - Stadium seats
 - Sofas
 - Heights of checkout counters at supermarkets
 - Lengths of shovel handles

DIFFERENT SIZES FOR DIFFERENT SIZE USERS

- When the only way to accommodate user population is to make the product in different sizes
- Examples:
 - Clothing
 - Shoes
 - Elementary school desks and chairs

DIFFERENT SIZES FOR DIFFERENT SIZE USERS

Example: Men's suit coat sizes available from mail-order clothing store

Coat sizes	37	38	39	40	42	44	46	48	50	52	54	56	58	60
Short (under 5'8")	x	x	x	x	x	x								
Regular (5'8" to 5'11")	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Long (6' to 6'3")				x	x	x	x	x	x	x	x	x	x	x
Extra long (over 6'3")					x	x	x	x	x	x	x	x		
Portly short (under 5'8")					x	x	x	x						
Portly regular (5'8" to 5'11")					x	x	x	x	x	x				

Work Systems and the Methods, Measurement, and Management of Work
by Mikell P. Groover, ISBN 0-13-140650-7.

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FITTING THE PERSON TO THE JOB

- Considers worker's physical and mental aptitudes in employment decisions
 - For example, using worker size and strength as criteria for physical work
- Common philosophy prior to ergonomics
- FPJ is still important
 - For example, educational requirements for technical positions

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FITTING THE JOB TO THE PERSON

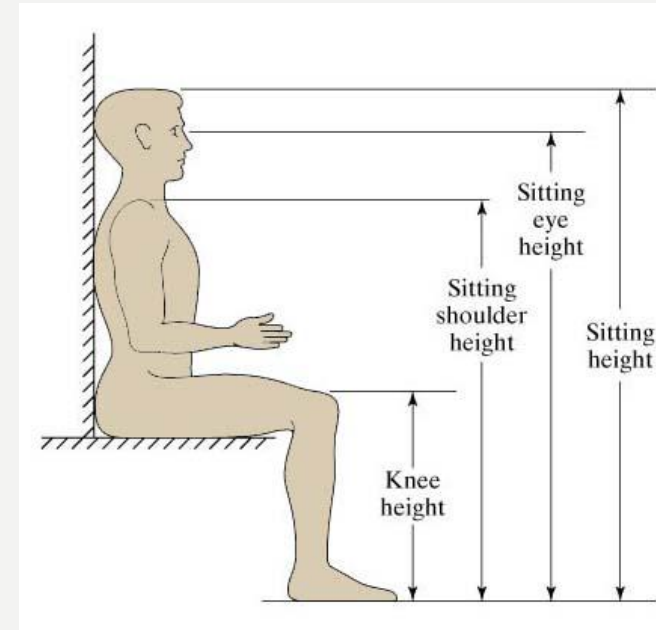
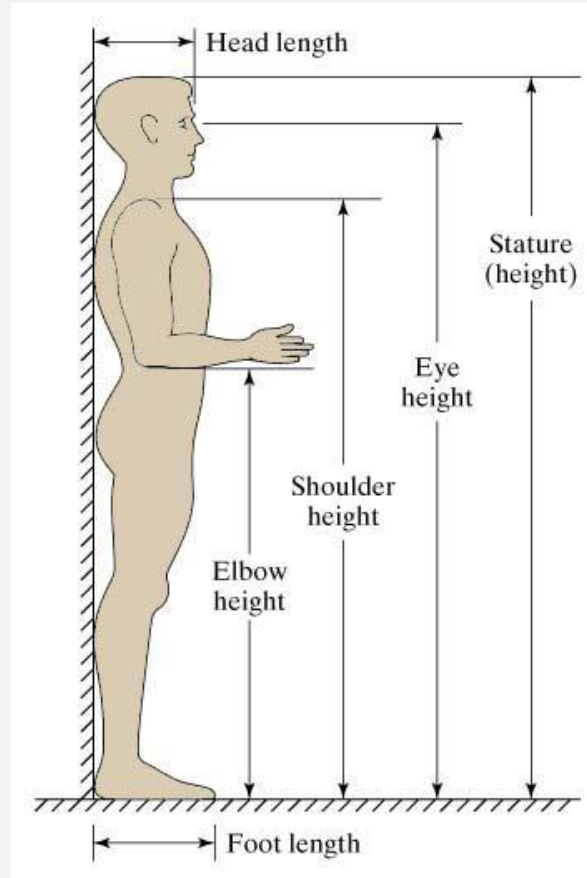
- Opposite of FPJ
- Philosophy: design the job so that any member of the work force can perform it
- Why the FJP philosophy has evolved:
 - Changes in worker skill requirements
 - Demographic changes (e.g. more women in the workforce)
 - Social and political changes (e.g., equal opportunity laws)

QUESTIONS TO SOLVE

- You have to standardize the office chair. One chair must fit for all.
- I. what are the possible static anthropometric measurements required for chair design in sitting posture ?

Static Dimensions of Human Body


Standing



Seated

ANTHROPOMETRIC SURVEYS

- Think and list about the areas/ places where anthropometric data may be required.

A decorative graphic on the left side of the slide, consisting of two parallel, wavy lines. The inner line is a light blue color, and the outer line is white. They follow a similar undulating path from the top left towards the bottom left.

LECTURE CLOSING

DID YOU KNOW.....?????

- In just half an hour, your body gives off enough combined heat to bring a half gallon of water to a boil.



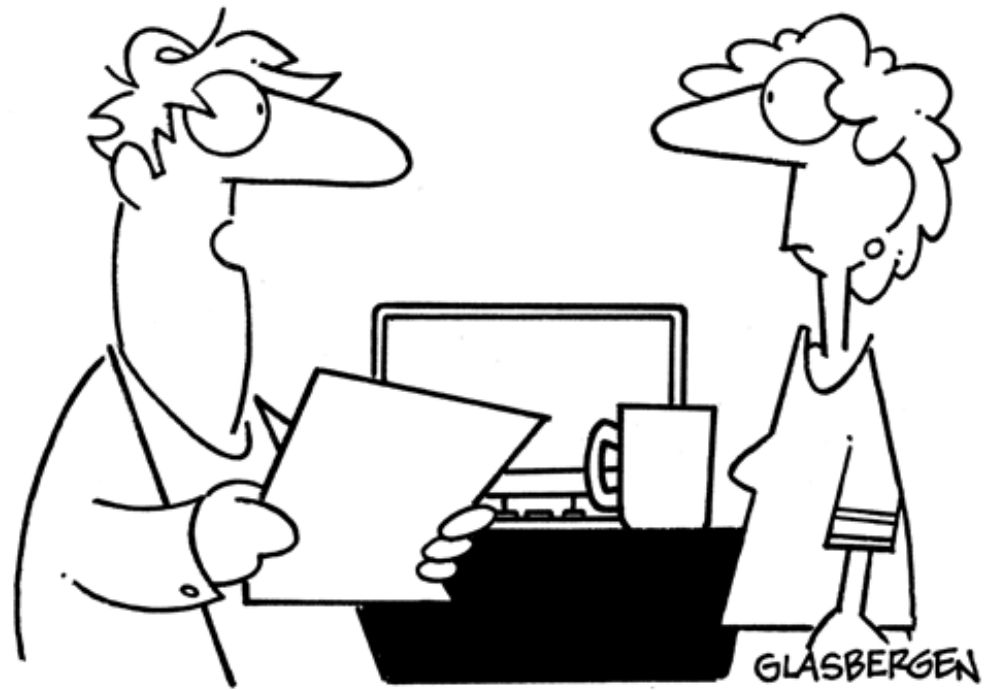
IF YOU WERE.....?????

- If you were an fashion designer which type of tools would you use to measure the dimensions of the models accurately.....???



GRAFFITI

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**“I pruned a tree once, so technically I’m allowed
to put ‘branch manager’ on my resumé.”**



THANK YOU ...



PLEASE READ ANTHROPOMETRY FROM
RECOMMENDED REFERENCE BOOKS FOR A
BETTER UNDERSTANDING OF NEXT
LECTURE