

PENNSYLVANIA STATE UNIVERSITY



IE 419

**Work Design:
Productivity and Safety**

Dr. Andris Freivalds

Class #6

DUE TODAY

HW#1 - 4:30 PM

310 LEONHARD

HW#2 ASSIGNED

PENNSSTATE



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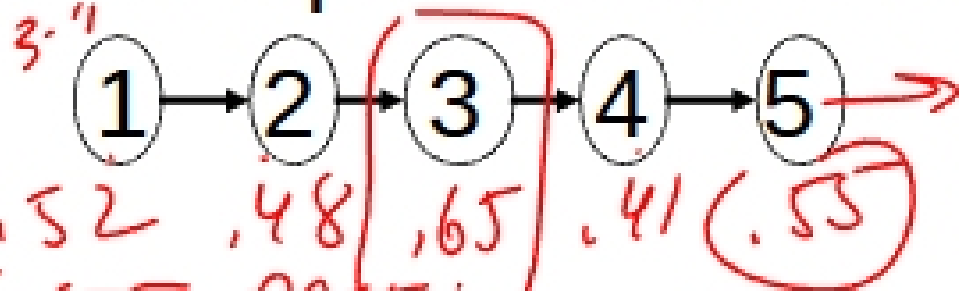
WORKER-MACHINE CHARTS → ONE WORKSTATION

(Assembly) Line Balancing

MANY WORKSTATIONS ↑ (Ch. 2, pp. 56-64)

↑ PRODUCTIVITY

- Worker-machine relationship determining ideal number of workers/workstations in production line
- Simple straight line (Ex #1):



Oper	ST	Delay time
1	.65 - 0.52	.13
2	.65 - 0.48	.17
3	.65 - 0.65	0
4	.65 - 0.41	.24
5	.65 - 0.55	.10

SLOWEST SETS PACE

$$\% \text{ efficiency (E)} = 100 \times \frac{\sum ST}{\sum AT}$$

AT = ALLOWED TIME

$$= 100 \times \frac{2.61}{5(.65)} = 80.3\%$$

$$\% \text{ idle} = 100 \times \frac{\sum DT}{\sum AT}$$

$$= 100 \times \frac{.64}{3.25_{\text{min}}} = 19.77\% \downarrow$$

80.3

$\Sigma = 2.61$ $\Sigma = .64$