IE-341
Section 1, CRN: 62596/62597/80531-91742

Second Semester 1446 (Spring-2025) – 3(2,1,2)
"HUMAN FACTORS ENGINEERING"

Thursday, February 06, 2025 (07/08/1446H)

Tutorial 5: Signal Detection Theory

Name:	Student Number: 44	Section: 9-10

Answer ALL of the following questions

1) Compare the inspection capability of Inspector A and Inspector B, determining d' and decision criterion. Inspector A located 26 of 28 defective parts, but also called 2 of 15 good parts defective. Inspector B found 29 of 30 defects, but called 6 of 20 good parts defective. In this case, the value of a 'hit' was greater than the cost of a 'false alarm'.

2) Ali is a rain forecaster at 'Predicta-Weather'. Over a 3-month period, he forecast that no rain would fall on 60 of the 67 days on which no rain actually fell. He also -incorrectly- forecast that no rain would fall on 2 of the 22 days in which rain actually fell. For the following analyses, assume that a 'signal' is a rainy day.

a) Determine Ali's d', stating whether he is a liberal or conservative forecaster.

b) Management is very concerned that Ali is making too many False Alarms, and would like to see these reduced to a probability of 0.001. Determine Ali's resultant Hit Rate with this reduced False Alarm Rate, assuming the same d' as found in (a).

3) Repeat Q2 using the following data:

Forecast	**True Weather**	
	Rain	No Rain
Rain	15	8
No Rain	2	10

4) Repeat Q2 using the following data:

Forecast	**True Weather**	
	Rain	No Rain
Rain	9	6
No Rain	9	11