



COLLEGE OF SOCIAL SCIENCES, THEOLOGY, HUMANITIES & EDUCATION

NHPS506: Ergonomic and Workplace Design

END OF SECOND SEMESTER EXAMINATIONS

APRIL/MAY 2026

LECTURER: Dr M C MATIKA

DURATION: 3 HOURS

INSTRUCTIONS

1. This paper contains **TWO** sections (Section A and Section B).
2. Section A is **COMPULSORY**.
3. Answer **ANY TWO (2) questions** from Section B.
4. Start each question on a new page in your booklet.
5. Credit will be awarded for logical, systematic and neat presentation
6. Do not repeat material.

SECTION A: COMPULSORY

INSTRUCTION: *Answer Question 1.*

Read the following case and answer all questions that follow.

Question 1

Case Study: “FutureTech’s Hybrid Work Experiment”

FutureTech, a mid-sized software development company, recently transitioned to a mandatory hybrid work model: employees must work from the office three days per week and may choose to work remotely for two days. The goal was to improve work-life balance and attract talent. However, in six months, several issues have emerged:

- a. Physical complaints: Increased reports of musculoskeletal discomfort (neck, back, wrist pain) among employees, both at home and in the office. Home setups vary widely, and the office chairs/desks are outdated.
- b. Cognitive overload: Developers complain of constant digital notifications, back to back virtual meetings on remote days, and difficulty disconnecting after hours.
- c. Team cohesion: Junior staff feel isolated and miss informal learning opportunities. Managers struggle to monitor workloads and provide support equitably across locations.
- d. Environmental inconsistencies: Office noise levels are high on “office days” due to increased density, while remote workers report distractions at home (e.g., family, poor internet).
- e. Resistance to change: Some senior employees resent the loss of autonomy and perceive the policy as mistrustful.

The CEO has asked your consultancy, ErgoDesign Solutions, to analyse the work system and propose evidence-based improvements.

1. Apply the SEIPS (Systems Engineering Initiative for Patient Safety) model or another socio-technical systems framework to analyse the key mismatches in FutureTech’s work system.

**(15
marks)**

2. Using principles of macro-ergonomics and participatory ergonomics, outline a process for engaging stakeholders to redesign FutureTech’s hybrid work system. **(10 marks)**

3. Select TWO specific ergonomic risk assessment methods (one physical, one cognitive/organisational) that you would use to gather data on the problems described. Justify your choices. **(10**

marks)

4. Based on your analysis, propose ONE detailed intervention targeting either (a) physical ergonomics or (b) psychosocial well-being. Explain how it aligns with human-centred design. **(5 marks)**

SECTION B

INSTRUCTION: Answer ANY TWO (2) questions

Question 2

Compare and contrast Cognitive Work Analysis (CWA) with traditional task analysis. Discuss the strengths and limitations of each in designing complex, technology-mediated work systems (e.g., air traffic control, healthcare diagnostics). **(30 marks)**

Question 3

The Job Demands-Resources (JD-R) model is widely used in psychosocial work design. Critically evaluate its utility for addressing burnout in high-stress professions (e.g., nursing, customer service). What are the potential pitfalls of applying JD-R without considering macro-ergonomic factors? **(30 marks)**

Question 5

“Resilience Engineering” proposes a shift from preventing failure to enabling systems to adapt under pressure. Discuss how this approach changes the way we design for safety in high-reliability organisations (e.g., nuclear power, aviation). Provide examples. **(30 marks)**

END OF PAPER
