

WM9QT-15 Healthcare System Redesign

25/26

Department

WMG

Level

Taught Postgraduate Level

Module leader

Sudakshina Lahiri

Credit value

15

Module duration

4 weeks

Assessment

100% coursework

Study location

University of Warwick main campus, Coventry

Description

Introductory description

This module entails exploring approaches that are used for redesigning healthcare systems resulting from quality improvements. Informed by various disciplines, module materials will examine a range of approaches to address such priorities as system performance, timeliness of care, affordability, corrective actions necessary to reduce system errors, trade-offs, along with system efficiency and effectiveness.

Module aims

This module aims to provide students with fundamental knowledge involving the functional analysis of health systems and redesigning such systems to reduce and/or eliminate errors for quality improvement. It will also focus on understanding and evaluating approaches that guide trade-offs and managing risks when redesign health systems to ensure performance.

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be

covered. Actual sessions held may differ.

1. Conceptual designs of health systems
2. Functionalities and analyses involving health systems
3. Concepts of verification and validation
4. Issues of traceability among system requirements

Learning outcomes

By the end of the module, students should be able to:

- 1. Critically analyze components, processes, activities, and interactions in the conceptual design and redesign of the healthcare system.
- 2. Synthesize stakeholder information to understand a given quality problem within a system.
- 3. Systematically model data and information for system redesign.
- 4. Analyse and assess derived models to evaluate and mitigate risks to ensure system performance.
- 5. Critique the role of key performance indicators in the redesign of healthcare operations.

Indicative reading list

The Royal Academy of Engineering and The Academy of Medical Sciences. (2017). Engineering better care a systems approach to health and care design and continuous improvement. Available on the web at: <https://raeng.org.uk/policy-and-resources/engineering-policy/health/engineering-better-care>

Procter, P. R., Compton, W.D., Grossman, J.H., and Fanjiang, G. (2005) Building a Better Delivery System. A New Engineering/Health Care Partnership. National Academy of Engineering (US) and Institute of Medicine (US) Committee on Engineering and the Health Care System; Washington (DC): National Academies Press (US); 2005. ISBN-10: 0-309-09643-X

Clarkson, J. P. (2018). What has engineering design to say about healthcare improvement? Design Science, 4. <https://doi.org/10.1017/dsj.2018.13>.

Clarkson, J., Dean, A.J., Ward, B.J., Komashie, C., A. and Bashford, T. (2018). A systems approach to healthcare: from thinking to practice. Future Healthcare Journal 2018 Vol 5, No 3: 151–5.

Komashie A, Ward J, Bashford T, et al. Systems approach to health service design, delivery and improvement: a systematic review and meta-analysis. BMJ Open 2021;11:e037667. doi:10.1136/bmjopen-2020-037667

Kaplan G, Bo-Linn G, Carayon P. Bringing a systems approach to health. IOM Discuss Pap 2013;Published online:1–26 <http://www.iom.edu/systemsapproaches>.

[View reading list on Talis Aspire](#)

Research element

This module will delve into translating engineering concepts that characterize system design and integrate this with operational management and health science.

Interdisciplinary

Healthcare operational management is an evolving discipline that combines health science methodologies with engineering, statistics, quantitative elements of management with data science for quality and productivity improvement in the healthcare sector. This module will draw approaches and evidence from these diverse disciplines for health system redesign.

Subject specific skills

- problem solving
- risk management
- information literacy

Transferable skills

- adaptability
 - ethical values
-

Study

Study time

Type	Required
Lectures	20 sessions of 1 hour (13%)
Seminars	(0%)
Tutorials	(0%)
Online learning (independent)	10 sessions of 1 hour (7%)
Other activity	15 hours (10%)
Private study	45 hours (30%)
Assessment	60 hours (40%)
Total	150 hours

Private study description

Further reading on topics related to design issues involving complex distributed healthcare systems.

Other activity description

Self-directed activities for preparation towards class work. Guidance for these activities will be provided to students in class.

Costs

No further costs have been identified for this module.

Assessment

You must pass all assessment components to pass the module.

Assessment group A

	Weighting	Study time	Eligible for self-certification
Written assessment -1 Develop a service redesign plan with respect to various requirements in the health sector. Word count: 2500.	60%	35 hours	Yes (extension)
Written assessment -2 Conduct statistical analysis of data involving given key performance indicator in the context of system redesign. Word count 1500.	40%	25 hours	Yes (extension)

Feedback on assessment

Written feedback.

Availability

Courses

This module is Core optional for:

- Year 1 of TWMS-H1S5 Postgraduate Healthcare Operational Management (Full-time)