

Module Title	Digital Technology in Health and Care
Module Code	BMDS 7006
Level	7
Pre-Requisites	No
Status	Core module: MSc/PGDip/PGCerT/UniCert Digital Skills for the Health and Care Professions
Credits	40
Semester	AUTUMN & SPRING SEM
Timetabling	Weeks 1-19. Live sessions in Collaborate with recordings Live sessions (synchronous) Once a Month. Thursday 1:00 – 5.00 pm (UK time).
Module Coordinator	Muntaha Alam Nafisa
Other Lecturer	Dr Philip Scott, Dr Edward Conley, Dr Wendy Dearing, Dr Jodie Croxall, Guest Lecturer (TBC)
Version Date	4 th September 2022

Module Aims

To explore the role of digital technology within a whole systems approach to data use and management that is not dependent on individual sectors within the health or social care and which supports seamless care. This will inform the provision of a digitally literate workforce that helps individuals interact with each other, patients and the public within their roles.

Learning Outcomes

Upon the successful completion of this module, the student should be able to:

- Demonstrate a systematic, extensive and comparative knowledge and understanding of how data is used safely, ethically and appropriately in a multidisciplinary care setting to support whole system change, improve outcomes and partnership working.
- Apply a project management methodology to develop a whole system improvement programme specifying the approach/research design, objectives and outcomes.
- Demonstrate a systematic understanding and knowledge of the concepts, methods and technological components of digital technology and evaluate critically its functionality, benefits and limitations in a specific context.

Learning Methods

Students will learn through a combination of online lectures/seminars, case studies, and practical activities led by Department of Digital Health & Care staff and visiting lecturers. Learning materials will be included in most lectures and made available on Moodle. In many cases, students will be asked to carry out pre-or post-session work. Students will be asked to join an online discussion group and take part in the ongoing discussion.

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	60	15%
Independent learning	340	85%
Placement learning		
TOTAL	400	100%

Cohort 2 **BMDS 7006: Digital Technology in Health & Social Care Syllabus V.1**

Indicative Content to Achieve Learning outcome 1:(Subject to modification)		
Learning Outcome 1: Demonstrate a systematic, extensive and comparative knowledge and understanding of how data is used safely, ethically and appropriately in a multidisciplinary care setting to support whole system change, improve outcomes and partnership working.	Information organization & Exchange (Interoperability)	
	Interoperability Standard and standard development organizations	• Clinical Language, Terminology and coding • SNOMED CT • HL7 (v2,v3) • FHIR • ICD10 • CDISC • OMOP • OpenEHR
	Information Governance & Ethics • Health & Social Care Information Governance • Laws and regulations • Confidentiality and data protection	

Indicative Content to Achieve Learning outcome 2:(Subject to modification)		
Learning Outcome 2: Apply a project management methodology to develop a whole system improvement programme specifying the approach/research design, objectives and outcomes.	IS/IT project planning and Management:	
	1. Brief Overview	• Project Management • Program Management • Strategic management • Change Management • Knowledge management • Quality management • HR management • IT management
	2. Principles & Practice	
	3. Implication and Use of Different Project management methodology	• PRINCE2 • PMBOK
	Project Lifecycle Model	• Agile • Waterfall • Iterative
	Quality improvement method	• Control Charts • Plan-Do-Check-Act (PDCA) • Juran's Trilogy • Value Analysis Teams • Quality Circles • Total Quality Management • Six Sigma • Lean • The Verdict • References

	4. Project planning & Project management tool	• A Gantt chart • Logic Network • PERT chart • Product Breakdown Structure and • Work Breakdown Structure
	5. NASSS framework 6. How to define Success 7. How to define Failure	
	8. Project tracking and evaluation	• FITT framework

Indicative Content to Achieve Learning outcome 3:(Subject to modification)		
Learning Outcome 3: Demonstrate a systematic understanding and knowledge of the concepts, methods and technological components of digital technology and evaluate critically its functionality, benefits and limitations in a specific context.	Introduction to IS & IT in Health & Social Care	
	1. Industry 4.0 technology in Health & Social Care	• Blockchain • IoT • ERP • Artificial Intelligence • Virtual reality & Augmented Reality • Big .data Analytics • Mobile Health • Telehealth & Telemedicine • Digital Manufacturing, 3D printing & imaging • Machine learning • Cloud Computing • Simulation & Modelling • Holography • System Integration

Reading List BMDS 7006 (2022-2023):

All of these texts are available electronically via the UWTSD Library & Learning Resources

[Library and Learning Resources | University of Wales Trinity Saint David \(uwt.ac.uk\)](https://uwt.ac.uk/library-and-learning-resources/)

Indicative Reading Materials to Achieve Learning outcomes:(Subject to modification)	
Information organization & Exchange (Interoperability)	1. Oemig, F. and Snelick, R., 2016. Healthcare interoperability standards compliance handbook. Cham: Springer international publishing AG. 2. Tim Benson (2016) <i>Principles of Health Interoperability</i>. 3rd edition. Springer Cham. doi:10.1007/978-3-319-30370-3. 3. GOV.UK. 2022. <i>Integrated care partnership (ICP): engagement summary</i>. [online] Available at: < https://www.gov.uk/government/publications/integrated-care-partnerships-engagement-findings/integrated-care-partnership-icp-engagement-summary > [Accessed 30 August 2022]. 4. NHS England. 2022. <i>Integrated Care Systems: design framework</i>. [online] Available at: < https://www.england.nhs.uk/wp-content/uploads/2021/06/B0642-ics-design-framework-june-2021.pdf > [Accessed 30 August 2022]. 5. NHS England. 2022. <i>Integrated care</i>. [online] Available at: < https://www.england.nhs.uk/integratedcare/ > [Accessed 30 August 2022] 6. HI7.org. 2022. <i>Overview-clinical - FHIR v4.3.0</i>. [online] Available at: < https://hl7.org/fhir/overview-clinical.html > [Accessed 30 August 2022]. 7. SNOMED. 2022. [online] Available at: < https://www.snomed.org/snomed-ct/five-step-briefing > [Accessed 30 August 2022].

Information Governance & Ethics	1. Ansell, C. and Torfing, J. eds., 2022. <i>Handbook on theories of governance</i>. Edward Elgar Publishing. 2. Kooiman, J., 2003. <i>Governing as governance</i>. 1st Edition. Sage Publication. 3. Ammenwerth, E. and Rigby, M. eds., 2016. <i>Evidence-based health informatics: Promoting safety and efficiency through scientific methods and ethical policy</i> (Vol. 222). IOS Press. 4. Ico.org.uk. 2022. <i>Guide to Data Protection</i>. [online] Available at: < https://ico.org.uk/for-organisations/guide-to-data-protection/ > [Accessed 30 August 2022]. 5. Breaux, R.W., Black, E.W. & Newman, T. (2014) <i>A guide to data protection and breach response</i>. Aspen Publishers, Inc. 6. Mitchell, S., 2009. <i>How to Survive a Data Breach: A Pocket Guide</i>. IT Governance Ltd 7. Wacks, R., 2015. <i>Privacy: A very short introduction</i>. OUP Oxford. 8. Sujan, M., Scott, P. and Cresswell, K., 2020. Digital health and patient safety: technology is not a magic wand. <i>Health Informatics Journal</i>, 26(4), pp.2295-2299. 9. Tallon, P.P., Ramirez, R.V. and Short, J.E., 2013. The information artifact in IT governance: Toward a theory of information governance. <i>Journal of Management Information Systems</i>, 30(3), pp.141-178.
IS/IT project planning and Management:	1. The Topol Review — NHS Health Education England. 2022. <i>The Topol Review</i>. [online] Available at: < https://topol.hee.nhs.uk/the-topol-review/ > [Accessed 30 August 2022]. 2. Ahmed, A., 2011. <i>Software project management: A process-driven approach</i>. CRC Press. 3. Cresswell, K.M., Bates, D.W. and Sheikh, A., 2013. Ten key considerations for the successful implementation and adoption of large-scale health information technology. <i>Journal of the American Medical Informatics Association</i>, 20(e1), pp.e9-e13. 4. Thamhain, H.J., 2014. <i>Managing technology-based projects: Tools, techniques, people and business processes</i>. John Wiley & Sons. 5. Greenhalgh, T. and Abimbola, S., 2019. The NASSS framework-a synthesis of multiple theories of technology implementation. <i>Stud Health Technol Inform</i>, 263, pp.193-204. 6. Core.ac.uk. 2022. <i>Application of the FITT framework to evaluate a prototype health information system</i>. [online] Available at: < https://core.ac.uk/download/pdf/268002475.pdf > [Accessed 30 August 2022]. 7. Kendall K. E. & Kendall J. E. (2020). <i>Systems analysis and design</i> (Tenth edition global). Pearson Education Limited. 8. Scott, P.J. and Briggs, J.S., 2010. STAT-HI: a socio-technical assessment tool for health informatics implementations. <i>The open medical informatics journal</i>, 4, p.214. 9. Michie, S., Van Stralen, M.M. and West, R., 2011. The behaviour change wheel: a new method for characterising and designing behaviour change interventions. <i>Implementation Science</i>, 6(1), pp.1-12.
Introduction to IS & IT in Health & Social Care	1. Coiera, E., 2015. <i>Guide to health informatics</i>. CRC press. 2. Javaid, M. and Haleem, A., 2019. Industry 4.0 applications in medical field: A brief review. <i>Current Medicine Research and Practice</i>, 9(3), pp.102-109. 3. Blobel, B., 2020, September. Application of industry 4.0 concept to health care. In <i>pHealth 2020: Proceedings of the 17th International Conference on Wearable Micro and Nano Technologies for Personalized Health</i> (Vol. 273, p. 23). IOS Press. 4. Ahsan, M.M. and Siddique, Z., 2022. Industry 4.0 in Healthcare: A systematic review. <i>International Journal of Information Management Data Insights</i>, 2(1), p.100079. 5. Mohamed, N. and Al-Jaroodi, J., 2019, April. The impact of Industry 4.0 on healthcare system engineering. In <i>2019 IEEE international systems conference (SysCon)</i> (pp. 1-7). IEEE. 6. Popov, V.V., Kudryavtseva, E.V., Kumar Katiyar, N., Shishkin, A., Stepanov, S.I. and Goel, S., 2022. Industry 4.0 and Digitalisation in Healthcare. <i>Materials</i>, 15(6), p.2140.