Digital Health and Artificial Intelligence Course Descriptor

Course Title	Digital Health and Artificial Intelligence	Faculty	EDGE Innovation Unit (London)
Course code	NCHNAP6134	Course Leader	Professor Scott Wildman (interim)
Credit points	15	Teaching Period	This course will typically be delivered over a 6-week period.
FHEQ level	6	Date approved	September 2021
Compulsory/ Optional	Compulsory	Date modified	
Pre-requisites	None		
Co-requisites	None		

Course Summary

The course examines the principles, theory and concepts that underpin digital health and the impact of artificial intelligence (AI) and digital technologies in healthcare sectors. It examines the profound influence that the digital realm is having on approaches to health care, and how digital tools and techniques, that range from mobile healthcare devices to AI driven digital diagnostic systems to bespoke health therapies are set to revolutionise the health care ecosystem. Such transformations come with many challenges and opportunities and the requisite governance, policy and security safeguards are also examined in the course.

Course Aims

- For learners to explore the challenges and opportunities afforded by digital health and AI in health care contexts.

- For learners to consider the wider business, social, ethical, cultural and regulatory contexts associated with complex digital and artificial intelligence driven interventions.

- For learners to explore the implications of digital health and artificial intelligence within laboratory and experimental contexts.

Learning Outcomes

On successful completion of the course, learners will be able to:

Knowledge and Understanding

K1c   A systematic understanding of the principles, concepts and application of digital health and artificial intelligence.

K3c   A systematic understanding of how to evaluate the field of digital health and artificial intelligence through evaluation of scholarly articles, to draw evidence-based conclusions.

K4c   A critical understanding of the wider business environment, cultural, ethical, regulatory and economic contexts within which digital health and artificial intelligence operate.

Subject Specific Skills

S2c   Evaluate the impact of artificial intelligence in healthcare contexts and explore the principles and methodologies of digital health within a laboratory context.

S3c   Critically evaluate the digital healthcare and artificial intelligence sectors, using a range of scholarly articles and data, to identify the challenges and opportunities the fields present.

S4c   Conceptually plan a mini artificial intelligence project aligned to business objectives.

Transferable and Professional Skills

T1c   Exercise initiative and personal responsibility in professional development, learning new skills and challenging assumptions.

T3c   Communicate critical arguments and big-picture thinking to non-specialist audiences.

T3c   Display an advanced level of technical proficiency in written English and competence in applying scholarly terminology, so as to be able to apply skills in critical evaluation, analysis and judgement effectively in a diverse range of contexts.

T4c   Promote professionalism, integrity and ethics in unpredictable contexts.

Teaching and Learning

This is an e-learning course, taught throughout the year.

This course can be offered as a standalone short course.

Teaching and learning strategies for this course will include:

- Online learning
- Online discussion groups
- Online assessment

Course information and supplementary materials will be available on the University's Virtual Learning Environment (VLE).

Learners are required to attend and participate in all the formal and timetabled sessions for this course. Learners are also expected to manage their self-directed learning and independent study in support of the course.

The course learning and teaching hours will be structured as follows:

- Off-the-job learning and teaching (6 days x 7 hours) = 42 hours
- One-the-job learning (12 days x 7 hours) = 84 hours (e.g. 2 days per week for 6 weeks)
- Private study (4 hours per week) = 24 hours

Total = 150 hours

Workplace assignments (see below) will be completed as part of on-the-job learning.

Assessment

Formative

Learners will be formatively assessed during the course by means of set assignments. These will not count towards the final degree but will provide learners with developmental feedback.

Summative

Assessment will be in two forms:

AE	Assessment Type	Weighting	Online submission	Duration	Length
1	Set Exercises (problem-solving)	50%	Yes	Requiring on average 20 – 25 hours to complete	-
2	Project	50%	Yes	Requiring on average 20 – 25 hours to complete	-

Feedback

Learners will receive formal feedback in a variety of ways: written (via email or VLE correspondence) and indirectly through online discussion groups. Learners will also attend a formal meeting with their Academic Mentor (and for apprentices, including their Line Manager). These bi or tri-partite reviews will monitor and evaluate the learner's progress.

Feedback is provided on summatively assessed assignments and through generic internal examiners' reports, both of which are posted on the VLE.

Indicative Reading

Note: Comprehensive and current reading lists for courses are produced annually in the Course Syllabus or other documentation provided to learners; the indicative reading list provided below is used as part of the approval/modification process only.

Books

- West, D. M., Miller, Edward Alan, Brookings Institution, & ProQuest. (2009). *Digital medicine : health care in the Internet era*. Washington, D.C. : Brookings Institution Press.

- Sandler, R. L. (2014). *Ethics and emerging technologies*. Houndsmills, Basingstoke, Hampshire ; New York, NY : Palgrave Macmillan 2014

- Robeva, R., & Hodge, Terrell. (2013). *Mathematical Concepts and Methods in Modern Biology* (1st edition).

- Turnpenny, P. D., Ellard, Sian, & Cleaver, Ruth. (2021). *Emery's Elements of Medical Genetics and Genomics* (Sixteenth edition.). Philadelphia, PA : Elsevier 2021

Journals

Learners are encouraged to read material from relevant journals on applied cell biology as directed by their course leader. Including:

- Dixon, T. A, Curach, N. C., & Pretorius, I. S. (2020). Bio-informational futures The convergence of artificial intelligence and synthetic biology. EMBO Reports, 21(3), e50036–e50036. https://doi.org/10.15252/embr.202050036

Electronic Resources

Learners are encouraged to consult relevant websites on applied cell biology.

Indicative Topics

- Principles of digital health

- Application of AI in health care contexts

- Laboratory science and digital culture

Version History

Title: NCHNAP6134 Digital Health and AI Course Descriptor					
Approved by: Academic Board					
Location: Academic Handbook/Programme specifications and Handbooks/ Undergraduate Apprenticeship Programmes/BSc (Hons) Bioscience with Digital Technologies Programme Specification/Course Descriptors					
Version number	**Date approved**	**Date published**	**Owner**	**Proposed next review date**	**Modification (As per AQF4) & category number**
3.0	October 2022	January 2023	Scott Wildman	September 2026	Category 1: Corrections/clarifications to documents which do not change approved content or learning outcomes

Category 3: Changes to Learning Outcomes |
| 2.0 | January 2022 | April 2022 | Scott Wildman | September 2026 | Category 3: Changes to Learning Outcomes |
| 1.0 | September 2021 | September 2021 | Scott Wildman | September 2026 | |