Mandatory Courses

Transforming healthcare	
Academic discipline	Healthcare Management
Semester	2
ECTS	6
Lesson hours	48h
Language	English
Activity type	Lectures
Teacher	Valentina Beretta Ian Cumming Maria Chiara Demartini
Prerequisites	None
Learning outcomes	Participants will gain knowledge on the challenges of the healthcare sector, at different levels of analysis, and transformational strategies to address them exploiting AI potential.
Course contents	• Management of Healthcare Organizations • Financial resources • Manage the complexity of the implementation of AI-based activities • Provide support to decision-making process in a multi-objective environment
Teaching methods	Frontal lectures, flipped classroom, seminars with leaders in the healthcare field, teamworks and case studies
Recommended or required readings	Walshe, K., and Smith, J. (eds.). Healthcare management, II ed., Open University Press, Maidenhead, UK
Assessment methods	Assessment of learning through an intermediate test and / or a final test in the forms of multiple choice tests, exercises, reports, workshops or project work.
SDGs Addressed (https://sdgs.un.org/goals)	Goal 3: Ensure healthy lives and promote well-being for all at all ages, and in particular: - Goal 3.8: Achieve universal health coverage - Goal 3.c: Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing

	countries, especially in least developed countries and small island developing States. Goal 8: Decent work and economic growth Goal 9: Industry, innovation, and infrastructure Goal 12: Responsible consumption and production
Further information	
Ad hoc course for xAIM [yes/no]	Yes

AI and healthcare workforce	
Academic discipline	Healthcare Management
Semester	2
ECTS	6
Lesson hours	48h
Language	English
Activity type	Lecture
Teacher	Ian Cumming Chiara Demartini Valentina Beretta
Prerequisites	None
Learning outcomes	Participants will gain knowledge on the challenges of the healthcare workforce, taking into consideration the evolving competences that are needed. Moreover, this course will focus on the relationship between the clinicians and the patients when adopting AI devices, considering the social and psychological aspects of computer-mediated communication.
Course contents	• Acceptance of AI by healthcare professionals/managing change; • Redesigning roles and systems; • Use of AI in Education and Training; • Patients safety and clinical governance considerations; • Who has primacy - doctor or machine? Medico-legal aspects; • AI and the clinician patient relationship - interacting with expert patients, potential disempowerment of clinicians, potential to devalue clinical roles; • New roles/professions in healthcare - bioinformaticians, data managers, informatics; • Social and psychological aspects of computer-mediated communication.
Teaching methods	Frontal lectures, flipped classroom, seminars with leaders in the healthcare field, teamworks and case studies
Recommended or required readings	
Assessment methods	Assessment of learning through an intermediate test and / or a final test in the

	forms of multiple choice tests, exercises, reports, workshops or project work.
SDGs Addressed (https://sdgs.un.org/goals)	Goal 3: Ensure healthy lives and promote well-being for all at all ages Goal 4: Quality Education
Further information	-
Ad hoc course for xAIM [yes/no]	Yes

Data Driven Health Care	
Academic discipline	Data science
Semester	1
ECTS	6
Lesson hours	48h
Language	English
Activity type	Theoretical lectures and lab
Teacher	Paola Cerchiello, Enea Parimbelli
Prerequisites	None
Learning outcomes	The student will acquire the fundamental skills of understanding and managing biomedical data. This includes electronic collection, storage and exploration by means of statistical methods
Course contents	• Information modeling (files, databases) • Data in healthcare (biological, clinical, administrative and research) • Electronic data collection • Interoperability • Descriptive statistics • Univariate analysis • Bivariate analysis • Inferential statistics
Teaching methods	Frontal lectures (online), hands-on lab, reading, homework assignments
Recommended or required readings	Health Informatics - a practical guide for healthcare and information technology professionals. Robert E. Hoyt (6th edition, freely available as a pdf)
Assessment methods	Assessment of learning through an intermediate test and / or a final test in the forms of multiple choice tests, exercises, reports, workshops or project work.
SDGs Addressed (https://sdgs.un.org/goals)	Goal 4: Quality Education Goal 9: Industry, Innovation and Infrastructure
Further information	-
Ad hoc course for xAIM [yes/no]	yes

Introduction to Data Science	
Academic discipline	Computer Science
Semester	1
ECTS	6
Lesson hours	48h
Language	English
Activity type	lectures
Teacher	Blaž Zupan
Prerequisites	/
Learning outcomes	After a successful completion of the course, the students should be able to: ● Prepare the data in attribute-value format suitable for machine learning methods. ● For a given data set, distinguish between application of supervised and unsupervised learning. ● Given the data, select the right method for its analysis. ● Use feature dimensionality reduction techniques to help understand the data. ● Use the most appropriate data visualization technique for a given problem. ● Apply the right model evaluation and scoring approaches to assess the quality of the modeling technique. ● Understand the necessity of explanations, and be able to explain results of unsupervised or supervised modeling. ● Use Orange Data Mining software for data analytics.
Course contents	The course will in theory and through practical exercises and hands-on lectures include the following topics: ● Introduction to data science. Typical problems and applications. Introduction to supervised and unsupervised learning. ● Introduction to techniques of data mining and knowledge discovery in databases, with emphasis on their application in medicine. Data

	preprocessing, visualizations (types and appropriate use). ● Data clustering techniques, cluster explanation. ● Dimensionality reduction techniques, projections. ● Predictive models: classification, regression. ● Overfitting. ● Model evaluation. ● Explanations of predictive models, SHAP values. ● Practical examples of data science from medicine, bioinformatics, and healthcare.
Teaching methods	Lectures using modern audio-visual equipment. Individual and group-based project assignments. Emphasis on practical exercises.
Recommended or required readings	Tan, P.-N., Steinbach, M., and Kumar, V. (2006) Introduction to Data Mining, Pearson Education.
Assessment methods	Assessment of learning through an intermediate test and / or a final test in the forms of multiple choice tests, exercises, reports, workshops or project work. 50 % homeworks 50 % written exam Grading: 6-10 pass, 5 fail
SDGs Addressed (https://sdgs.un.org/goals)	Goal 3: Good health and well-being Goal 9: Industry, innovation, and infrastructure
Further information	
Ad hoc course for xAIM [yes/no]	yes

Z-Inspection®: A process to assess trustworthy AI in practice	
Academic discipline	Ethics , Computer Science, Healthcare
Semester	2
ECTS	6
Lesson hours	48h
Language	English
Activity type	
Teacher	Roberto V. Zicari Dennis Vetter
Prerequisites	-Basic knowledge of data science -Basic knowledge of AI -Students should have an interest in reflecting on what is right or wrong, and it is assumed that they are capable of discussing a scenario and taking a view on whether an action is ethical. -We encourage students with different backgrounds, knowledge, and geographies to enroll in this course. -The topic is highly interdisciplinary and therefore requires different points of views, expertise, and attitudes.
Learning outcomes	How to assess trustworthiness of AI systems for healthcare using socio-technical scenarios.
Course contents	The Z-Inspection® process is a formalized and principled approach for evaluating the design, deployment, and use of AI- based systems towards, aimed at ensuring that the final system iteration is both trustworthy and trusted. It is positioned within the broader trend to design and assure trustworthy AI systems. It can be used at various stages of the AI development and maintenance process. First, in the design phase, the Z-Inspection® methodology can be utilized as a co-creation process to ensure an AI system meets the trustworthy AI criteria. Both before and after AI deployment, Z-Inspection® can be used as a validation process to assess the trustworthiness of the AI system being developed. Additionally, it can form part of an AI certification, audit or monitoring process. The latter can be considered a part of "ethical maintenance" for trustworthy AI.

	Detailed content: ● Introduction to the EU framework for Trustworthy AI :four ethical principles, rooted in fundamental rights: o (i) Respect for human autonomy o (ii) Prevention of harm o (iii) Fairness o (iv) Explicability seven requirements for their operationalization: o Human agency and oversight o Technical robustness and safety, o Privacy and data governance o Transparency o Diversity, non-discrimination and fairness o Societal and environmental wellbeing o Accountability ● The Z-Inspection® process: Human agency and oversight o the Set Up Phase o the Assess Phase o the Resolve Phase ● Assessment of AI use cases in healthcare o Analysis of Socio-Technical Scenarios o The ALTAI web tool o Claim and validation process
Teaching methods	Interactive lectures, students group reports, case studies. Students will work in small groups and learn to assess the use of AI systems in the domain of healthcare.
Recommended or required readings	(AI HLEG) High-Level Expert Group on Artificial Intelligence, "Ethics guidelines for trustworthy AI," European Commission, Text, Apr. 2019. Accessed: Oct. 26, 2020. [Online]. Available: https://op.europa.eu/en/publication-detail/-/publication/d3988569-0434-11ea-8c1f-01aa75ed71a1 European Commission, "LAYING DOWN HARMONISED RULES ON ARTIFICIAL INTELLIGENCE (ARTIFICIAL INTELLIGENCE ACT) AND AMENDING CERTAIN UNION LEGISLATIVE ACTS,"

	Brussels, COM(2021) 206 final, Apr. 2021. Accessed: Nov. 30, 2021. [Online]. Available: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021PC0206 R. V. Zicari et al., "Z-Inspection®: A Process to Assess Trustworthy AI," IEEE Trans. Technol. Soc., vol. 2, no. 2, pp. 83–97, Jun. 2021, doi: 10.1109/TTS.2021.3066209. R. V. Zicari et al., "On Assessing Trustworthy AI in Healthcare. Machine Learning as a Supportive Tool to Recognize Cardiac Arrest in Emergency Calls," Front. Hum. Dyn., vol. 3, p. 30, 2021, doi: 10.3389/fhumd.2021.673104. R. V. Zicari et al., "Co-Design of a Trustworthy AI System in Healthcare: Deep Learning Based Skin Lesion Classifier," Front. Hum. Dyn., vol. 3, p. 40, 2021, doi: 10.3389/fhumd.2021.688152. plus handed out in class
Assessment methods	Assessment of learning through an intermediate test and / or a final test in the forms of multiple choice tests, exercises, reports, workshops or project work.
SDGs Addressed (https://sdgs.un.org/goals)	Goal 3: Good health and well-being Goal 5: Gender equality Goal 10: Reduced inequalities
Further information	-
Ad hoc course for xAIM [yes/no]	yes

Trustworthy AI	
Academic discipline	Statistics / Business Administration
Semester	1
ECTS	6
Lesson hours	48h
Language	English
Activity type	Lectures
Teacher	• Paolo Giudici • Emanuela Raffinetti • Maria Chiara Demartini • Valentina Beretta
Prerequisites	Basics of statistics, basics of coding
Learning outcomes	Foundations of Trustworthy AI; Realizing Trustworthy AI; Learning how to quantitatively assess trustworthiness of AI in practice
Course contents	• Assessment of (digital) health technologies • Framework for achieving Trustworthy AI • Trustworthy AI: principles and measurement • Statistical learning models • Machine learning models • Accuracy • Robustness • Explainability • Fairness
Teaching methods	Frontal lectures, Classes and laboratories with Python
Recommended or required readings	handed out in class European Commission: Ethics guidelines for trustworthy AI (https://op.europa.eu/en/publication-detail/-/publication/d3988569-0434-11ea-8c1f-01aa75ed71a1)
Assessment methods	Assessment of learning through an intermediate test and / or a final test in the forms of multiple choice tests, exercises, reports, workshops or project work.
SDGs Addressed (https://sdgs.un.org/goals)	Goal 4: Quality Education Goal 9: Industry, Innovation and Infrastructure

Further information	
Ad hoc course for xAIM [yes/no]	yes

Elective Courses

Advanced AI Assessment	
Academic discipline	Healthcare Management
Semester	1
ECTS	6
Lesson hours	48h
Language	English
Activity type	Lectures
Teacher	Maria Chiara Demartini Valentina Beretta
Prerequisites	None
Learning outcomes	Students will get an extensive knowledge about Health Technology Assessment (HTA) including the factors affecting it and the way it could be successfully implemented in different healthcare systems. In particular, they will learn how to assess AI as a strategic lever to build value-based health systems.
Course contents	• HTA principles • Implementation of HTA in different healthcare systems • AI assessment
Teaching methods	Frontal lectures, group reports, case studies
Recommended or required readings	Goodman, C. S. (2004). Introduction to health technology assessment. The Lewin Group. virginia, USA. Banta, D. (2003). The development of health technology assessment. Health policy, 63(2), 121-132. Garrido, M. V., Kristensen, F. B., Busse, R., & Nielsen, C. P. (2008). Health technology assessment and health policy-making in Europe: current status, challenges and potential (No. 14). WHO Regional Office Europe. Marsh, K., Goetghebeur, M., Thokala, P., & Baltussen, R. (Eds.). (2017). Multi-criteria decision analysis to support healthcare decisions (p. 3). Cham: Springer International Publishing.

Assessment methods	Assessment of learning through an intermediate test and / or a final test in the forms of multiple choice tests, exercises, reports, workshops or project work.
SDGs Addressed (https://sdgs.un.org/goals)	Goal 4: Quality Education Goal 9: Industry, Innovation and Infrastructure
Further information	
Ad hoc course for xAIM [yes/no]	Yes

Introduction to healthcare management	
Academic discipline	Healthcare management
Semester	1
ECTS	6
Lesson hours	48h
Language	English
Activity type	Lectures
Teacher	Valentina Beretta Ian Cumming Maria Chiara Demartini
Prerequisites	None
Learning outcomes	This module provides the student with a comprehensive knowledge on the management of healthcare organisations, grounded on a diversified and international perspective. The complexity of healthcare organisations requires managers to develop a set of skills aimed at simultaneously managing clinical performance, staff and financial resources to provide a better outcome for the population as a whole. Therefore, students will learn how to experience ambidexterity in managerial activity in order to improve decision-making in a multi-objective environment. Learning will be based on lectures, teamwork and case studies delivered by lecturers and practitioners working for national and foreign healthcare organisations in order to compare and contrast different managerial approaches.
Course contents	• Quality in Healthcare Organizations (8 hrs) - Use evidence-based data and research methods to guide organisational transformations and quality assurance - Compare and contrast routines and innovations fostering quality improvements in different health settings (e.g. primary v secondary care, management of chronic diseases in different health systems) • Performance Management (8 hrs) - Rationale for performance measurement and management

	- Evolution of performance measurement practice in different health systems - Individual v organisational performance management • Financial Management in Health (6 hrs) - Health care expenses dynamics. An international comparison - Managing finance of a health care organisation - Analysis of the finance-performance linkages • Commissioning and Licensing (6 hrs) - Evidence-based practice in assessing needs, designing services and monitoring outcomes - Monitoring the quality of care provided • Project management (6 hrs) - Apply traditional project management tools to the development of a project in health care at different levels of analysis (team, department, organisation, trust, authority, health department) • Leadership in Healthcare (6 hrs) - Leadership versus management within a dynamic professional environment - Linking leadership and management practices to structures, cultures and behaviours in the private and public sector healthcare organisations - Role of leaders and managers in influencing and motivating teams - Team work improvement e.g. use of Emotional intelligence, Coaching and Mentoring and the use of interpersonal skills at work. • International competition and cross-border healthcare services (4 hrs) - Analysis of the EU directive 2011/24/EU on cross-border health care services - Screening of the potential for market development - Models for international health care partnerships - International outsourcing

Teaching methods	Frontal lectures, case studies and seminars. Lectures will be delivered in a flipped classroom approach. Lecturers will provide both a national and an international perspective to the contents of the module. In order to achieve the knowledge and competencies specified for this module, students will be asked to set groups and practice some teamwork with specific assignments. Case studies will be discussed in class in order to enhance the theory previously discussed. Students will have to understand the given problem by applying the knowledge acquired during lectures and show their decision-making competencies. Ad hoc seminars will extend the contents and knowledge provided in class.
Recommended or required readings	Walshe, K., and Smith, J. (eds.). Healthcare management, III ed., Open University Press, Maidenhead, UK.
Assessment methods	Assessment of learning through an intermediate test and / or a final test in the forms of multiple choice tests, exercises, reports, workshops or project work.
SDGs Addressed (https://sdgs.un.org/goals)	Goal 3: Good health and well-being, and in particular: - Goal 3.8: Achieve universal health coverage - Goal 3.c: Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States Goal 8: Decent work and economic growth Goal 9: Industry, Innovation, and Infrastructure. Goal 12: Responsible consumption and production
Further information	-
Ad hoc course for xAIM [yes/no]	Yes
Ad hoc course for xAIM [yes/no]	

Coding in Python	
Academic discipline	Computer science
Semester	1
ECTS	6
Lesson hours	48h lecture (pre-recorded lecture only)
Language	English
Activity type	Frontal lectures and hands-on labs
Teacher	Alessandro Bitetto
Prerequisites	none
Learning outcomes	The student will acquire basic skills of computer programming and scripting, using the Python (v3.x) programming language
Course contents	- What is a programming language and what can it be used for; - Python essential syntax - Variables and data structures: basic data types, strings, tuples, lists, and dictionaries; - Control structures: conditionals, loops, functions; - Intro to Object Oriented Programming: classes, objects and methods; - Leveraging external libraries: installing, importing and usage
Teaching methods	Frontal lectures, hands-on labs, homework assignments
Recommended or required readings	Learn python 3 the hard way. Zed Shaw
Assessment methods	Assessment of learning through an intermediate test and / or a final test in the forms of multiple choice tests, exercises, reports, workshops or project work.
SDGs Addressed (https://sdgs.un.org/goals)	Goal 4: Quality Education Goal 9: Industry, Innovation and Infrastructure
Further information	Prerequisite for these elective courses: a) computer vision and deep learning b) advanced topics in AI c) AutoML
Ad hoc course for xAIM [yes/no]	yes

Computer Vision and Deep learning	
Academic discipline	AI
Semester	2
ECTS	6
Lesson hours	48h lecture
Language	English
Activity type	Frontal lectures (pre-recorded) and interactive QA sessions (live)
Teacher	Gemma Roig and Dennis Vetter
Prerequisites	Coding in Python or equivalent knowledge
Learning outcomes	1. List useful real-world applications of computer vision 2. Apply and design computer vision systems and algorithms 3. Evaluate appropriate computer vision algorithms for a variety of problems
Course contents	- Image processing - Image classification - Multi-layer perceptrons + gradient descent - Deep learning - Convolutional neural networks and advanced architectures - Object detection - Image Segmentation - Recurrent neural networks - Video Analysis
Teaching methods	Frontal lectures, homework assignments, programming project
Recommended or required readings	Computer Vision: A Modern Approach (2nd Edition) by David A. Forsyth (Author), Jean Ponce (Author) Deep Learning (Adaptive Computation and Machine Learning series) by Ian Goodfellow (Author), Yoshua Bengio (Author), Aaron Courville (Author) http://www.deeplearningbook.org/
Assessment methods	Assessment of learning through an intermediate test and / or a final test in the forms of multiple choice tests, exercises, reports, workshops or project work.
SDGs Addressed (https://sdgs.un.org/goals)	Goal 4: Quality Education Goal 9: Industry, Innovation and Infrastructure
Further information	

Ad hoc course for xAIM [yes/no]	no

Advanced Topics in AI	
Academic discipline	Computer Science
Semester	2
ECTS	6
Lesson hours	48h lecture
Language	English
Activity type	Lectures, Exercises
Teacher	Prof. Wolfgang Nejdl
Prerequisites	Coding in Python or equivalent knowledge, mandatory AI courses
Learning outcomes	Introduction to the basic ideas and techniques underlying the design of intelligent computer systems. A specific emphasis lies on the statistical and decision-theoretic modeling paradigm. The techniques taught apply to a wide variety of artificial intelligence problems and serve as the foundation for further study in any application area.
Course contents	Search, MDPs, CSPs, introduction to probability theory and Bayes' Nets, Decision Networks, Value of Perfect Information, Reinforcement Learning, HMMs, Particle Filtering and Machine Learning
Teaching methods	Lecturer-Centered Approach to Learning
Recommended or required readings	Stuart Russell, Peter Norvig: Artificial Intelligence: A Modern Approach
Assessment methods	Assessment of learning through an intermediate test and / or a final test in the forms of multiple choice tests, exercises, reports, workshops or project work.
SDGs Addressed (https://sdgs.un.org/goals)	Goal 4: Quality Education Goal 9: Industry, Innovation, and Infrastructure
Further information	
Ad hoc course for xAIM [yes/no]	no

AutoML	
Academic discipline	Computer Science
Semester	2
ECTS	6
Lesson hours	48h lecture
Language	English
Activity type	MOOC
Teacher	Prof. Marius Lindauer
Prerequisites	Coding in Python or equivalent knowledge, mandatory AI courses, hands-on ML experience
Learning outcomes	The course on "Automated Machine Learning" addresses the challenge of designing well-performing Machine Learning (ML) pipelines, including their hyperparameters, architectures of deep Neural Networks and pre-processing. Future ML developers will learn how to use and design automated approaches for determining such ML pipelines efficiently.
Course contents	• Hyperparameter Optimization • Neural Architecture Search • Bayesian optimization • Evolutionary algorithms • Multi-fidelity optimization and gradient-based optimization • Useful meta strategies for speeding up the learning itself or AutoML
Teaching methods	MOOC
Recommended or required readings	Automated Machine Learning Methods, Systems, Challenges Herausgeber: Hutter, Frank, Kotthoff, Lars, Vanschoren, Joaquin (Eds.) https://www.springer.com/de/book/9783030053178
Assessment methods	Assessment of learning through an intermediate test and / or a final test in the forms of multiple choice tests, exercises, reports, workshops or project work.
SDGs Addressed (https://sdgs.un.org/goals)	Goal 4: Quality Education Goal 9: Industry, Innovation, and Infrastructure
Further information	

Ad hoc course for xAIM [yes/no]	no

Text Mining	
Academic discipline	Computer Science
Semester	1
ECTS	6
Lesson hours	48h lecture
Language	English
Activity type	Lectures
Teacher	Ajda Pretnar Žagar
Prerequisites	Introduction to Data Science
Learning outcomes	Use core machine learning algorithms for text mining Preprocess textual data Understand specifics of text Extract information from large corpora Transform raw text to attribute-value representation Evaluate language-based models
Course contents	• Dealing with unstructured data in healthcare • Text preprocessing, concordances and collocations • Clustering and cluster exploration on medical texts • Word enrichment and keyword techniques • Vector presentation of documents • Predictive modeling on text data • Topic modeling • Semantic analysis and document summarization • Sentiment analysis
Teaching methods	Lectures using modern audio-visual equipment. Individual and group-based project assignments. Emphasis on practical exercises.
Recommended or required readings	Dailanis, H. 2018. Clinical Text Mining: Secondary Use of Electronic Patient Records. Springer, Cham.
Assessment methods	Assessment of learning through an intermediate test and / or a final test in the forms of multiple choice tests, exercises, reports, workshops or project work.

	50 % homeworks 50 % written exam Grading: 6-10 pass, 5 fail
SDGs Addressed (https://sdgs.un.org/goals)	Goal 4: Quality education Goal 9: Industry, innovation, and infrastructure
Further information	
Ad hoc course for xAIM [yes/no]	

Information Ethics and Legal Aspects	
Academic discipline	Computer Science
Semester	2
ECTS	6
Lesson hours	48h lecture
Language	English
Activity type	Flipped Classroom
Teacher	Dr. Cameron Pierson – Prof. Amedeo Santosuosso – Dr. Sara Azzini
Prerequisites	
Learning outcomes	Students will: ● Apply principles of information ethics to relevant scenarios and cases. ● Develop ethical analytical skills. ● Identify and analyze ethical issues associated with the use of AI/ML in healthcare. ● Develop ethically reasoned solutions to issues of AI/ML in healthcare. ● Apply various ethical theories and frameworks in analysis.
Course contents	Students will be introduced to a variety of topics in information ethics (IE), ethical issues associated with artificial intelligence (AI) and machine learning (ML), both broadly and in healthcare applications. An interdisciplinary approach will support student development to identify, analyze, assess, and address the issues and implications of (un)ethical behaviour and bias in AI/ML development and application, and to apply various ethical theories and frameworks in analysis. Students will engage with topics in social-technical and ethical thinking in AI/ML design, development, and implementation. Specifically, the course adopts a flipped-classroom approach, in which traditional lecture time will be dedicated to engaging with readings. Seminars will encompass brief review of material, open-forum discussions on weekly themes, and in-class activities. Emphasis will be on engagement through peer discussion. It is important to note that ethical

	discourse includes the reasoned analysis of differing perspectives and addresses 'big questions' of life, society, and what it is to be 'good.' This necessarily means that content and discussion in this course may at times engage with difficult topics. Students are expected to be prepared to discuss the weekly readings and topics and engage thoughtfully, empathetically, and respectfully with their peers. In Module A, students will explore: ● What is information ethics? Why is it useful? ● Introduction to ethical theories and frameworks. ● Information ethics applied to specific issues, e.g., human rights, information access, privacy, cybersecurity, etc. ● Scholarly and media literature on generally discussed/documented issues with AI/ML, including AI/ML causing/being used in ethically problematic situations with a progressive focus on medical applications. ● Thought experiments and trolley problems, whose reasoned analysis will draw on information ethics principles. In Module B, students will explore: ● Digital Rights and Data ownership ● Right to privacy and its legislation (GDPR) ● Informed consent and patient autonomy ● Legal design techniques in health ● Data-driven decisions in health and AI and actors liability ● Re-use of personal data in healthcare and research ● Medical Device Regulation

Teaching methods	Emphasis will be on engagement through readings and open-forum discussion.
Recommended or required readings	Foundations of Information Ethics (2019) Burgess, J.T.F, Knox, E.J.M. American Library Association. Other readings as assigned.
Assessment methods	One paper at the end of the course, between 4000-5000 words, APA 7th ed. formatting. It will be an ethical assessment of a prompt with outline of student choices, grounded in and justified by an ethical framework of their choice. The prompt, a type of trolly problem, will be provided about mid-way through the course
SDGs Addressed (https://sdgs.un.org/goals)	Goal 3: Good Health and being well Goal 4: Quality Education Goal 16: Peace, justice, and strong institutions
Further information	
Ad hoc course for xAIM [yes/no]	no