UNIVERSITÀ DEGLI STUDI DI PADOVA

Organising institution	Università degli Studi di Padova Dipartimento di Scienze Cardio-Toraco-Vascolari e Sanità Pubblica Prof.ssa Annalisa Angelini
Partner Institutions	Vanderbilt University, USA Stanford University, USA IBM Thomas J. Watson Research Center, Yorktown Heights, USA Berkeley University, USA HLP Center, University of Pennsylvania, USA University of Amsterdam, The Netherlands University of Freiburg, Germany NIH Clinical Center, Bethesda, USA
Course Title and Description	**Artificial Intelligence, Big Data and Machine Learning in Biomedical research** Virtual Winter School on Zoom platform This initiative aims to increase the knowledge and the skills of PhD students of the medical area in the management of their research and results by using predictive modelling, Machine Learning and the correct application of Artificial Intelligence in pathology, in pathologic anatomy and in clinical pathology. Atctivities: Topic 1: Controversies in Statistical Learning in Clinical Epidemiology Moderator: Dario Gregori, University of Padova Topic Introduction: Giulia Lorenzoni, University of Padova (20 min) Controversies in Predictive Modeling, Machine Learning, and Validation in clinical research. Prof. Harrell Frank Vanderbilt University (40 min) Data science, statistics & health Rob Tibshirani Stanford University (40 min) How machine learning is transforming clinical decision Ronald Summers, MD, NIH Clinical Center, Bethesda (40 min) Floor discussion (40 min) Topic 2: Machine learning perspectives in novel field of bio-medical research Moderator: Ileana Baldi, University of Padova Topic Introduction: Corrado Lanera, University of Padova (20 min) Combining artificial intelligence and radiologist assessment to improve classification. Stefan Harrer, IBM Thomas J. Watson Research Center,Yorktown Heights, NY, USA (40 min) Active use of natural language in medical science and research. Prof. Graciela Gonzales, HLP Center, University of Pennsylvania (40 min) Floor discussion (40 min) Topic 3: "Data" science for "omics" sciences Moderator: TBD University of Padova Topic Introduction: TBD University of Padova (20 min) Targeted learning with application to omics.

Prof.Mark Van der Laan Berkeley University (40 min)
Floor discussion (40 min)

Topic 4: Artificial Intelligence in Pathology
Moderator: Annalisa Angelini, Fiorella Calabrese,University of Padova
Topic Introduction: Onno De Boer, University of Amsterdam (20 min)

Combining artificial intelligence and pathologist assessment for improving diagnosis and research
Gian Kayser, University of Freiburg (40 min)

Technical aspect and quality control in the application of artificial intelligence in pathology
Onno De Boer, University of Amsterdam (40 min)
Floor discussion (40 min)

Topic 5: Machine learning and prediction in COVID-19 epidemics
Moderator: Dario Gregori, University of Padova
Topic Introduction: Paola Berchialla, University of Torino (20 min)

Machine learning to improve COVID-19 epidemic behavior.
Jianying Hu, IBM Thomas J. Watson Research Center, Yorktown Heights, NY, USA (40 min)
Floor discussion (40 min)

Future perspective
Round table
Discussant Annalisa Angelini, Ileana Baldi, Fiorella Calabrese, Dario Gregori

Period	18/10/2021 – 22/10/2021
ETCS credits	2
Course fee	N/A
Course Level	PhD courses in the medical field