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Advanced Skill Course

One Health Technologies

Kenyatta University, Nairobi (Kenya)

9–13 February 2026

Organized by the University of Pisa in the framework of

Afya Moja (TNE23-00079 CUP C84C24000190006)

Program

Program at glance

	Monday	Tuesday	Wednesday	Thursday	Friday
Topic	Introduction to One health	Appropriate and enabling technologies for One-health	One health approach for human medicine	One health approach in Agri-vet	One health and society
Morning	Registration & Opening ceremony	Fundamentals of Digital Fabrication	Context based design of medical devices	One-health Technologies in agriculture	Ethics in One health
	Introduction to one-health Participants pitch	Fundamentals of electronic rapid prototyping	Health technology maintenance	One-health technologies in veterinary medicine	Management of public health
	Light lunch				
Afternoon	One-health and the sustainable development goals	Fundamentals of AI	One health and patient management AI in biomedicine The UBORA platform	Cultural Activities	Participants presentations
	Participants Pitch and project (Hands on)	Participants project (Hands on) Workshop on AI	Participants project (Hands on) Workshop on Computational modelling		Closing ceremony

Side meeting and events

- **ABEC meeting** – Tuesday 10th February 14:30 - 16:30 (invitation required)
- **Afya Moja Training for proposal preparation** – Wednesday 11th February 14:30 - 16:30 (invitation required)

With the support of:

African Biomedical Engineering Consortium
Innovation through Education

Monday 09/02		Introduction to One Health		
Start	**End**	**Topic**	**Responsible**	**Note**
08:00	08:30	Registration		
08:30	09:00	Opening Ceremony	• June Madete (KU) • Carmelo De Maria (UNIPI)	• Institutional greetings • School overview
09:00	09:30	Holistic One Health	Arti Ahluwalia (UNIPI)	Arti.ahluwalia@unipi.it
09:30	10:00			
10:00	10:30	Healthy Break		
10:30	11:00	One-health and the sustainable development goals	Fidelis Kilonzo (KU)	KILONZO.FIDELIS@ku.ac.ke
11:00	11:30			
11:30	12:00	Student's pitch presentation	Carmelo De Maria (UNIPI)	Part 1
12:00	12:30			
12:30	13:00			
13:00	13:30	Light Lunch		
13:30	14:00			
14:00	14:30	The Role of Biomedical Engineer in public Health	Leandro Pecchia (UNICAMPUS)	leandro.pecchia@unicampus.it
14:30	15:00			
15:00	15:30	Student's pitch presentation	Carmelo De Maria (UNIPI)	Part 2
15:30	16:00			
16:00	16:30			
16:30	17:00	Healthy Break		
17:00	17:30	Project Assignments	Carmelo De Maria (UNIPI)	
17:30	18:00	Icebreaking & Hands on activities	Carmelo De Maria (UNIPI)	
18:00	18:30			
18:30	19:00			

Tuesday 10/02		Appropriate and enabling technologies for One-health		
Start	**End**	**Topic**	**Responsible**	**Note**
08:30	09:00	Fundamentals of Digital Fabrication	• Carmelo De Maria (UNIPI) • Pierpaolo Fucile (UCBM)	• Carmelo.demaria@unipi.it • p.fucile@unicampus.it
09:00	09:30			
09:30	10:00			
10:30	10:30			
10:30	11:00	Healthy Break		
11:00	11:30	Fundamentals of electronic rapid prototyping	Latiff Cherono (Gear Box Europlacer)	latiff@gearbox-europlacer.com
11:30	12:00			
12:00	12:30			
12:30	13:00			
13:00	13:30	Digital infrastructures	Gabriele Oliva (UCBM)	g.oliva@unicampus.it
13:30	14:00	Light Lunch		
14:00	14:30			
14:30	15:00	Fundamentals of AI	• Vitoantonio Bevilacqua (POLIBA) • Claudia Ferraro (UCBM) • Maria Elisabetta Pagnano (UCBM)	• vitoantonio.bevilacqua@poliba.it • claudia.ferraro@unicampus.it • m.pagnano@unicampus.it
15:00	15:30			
15:30	16:00			
16:00	16:30			
16:30	17:00	Healthy Break		
17:00	17:30	HANDS ON		
17:30	18:00			
18:00	18:30			
18:30	19:00			

Workshops				
17:00	17:30	Workshop on AI	• Claudia Ferraro (UCBM) • Maria Elisabetta Pagnano (UCBM)	• claudia.ferraro@unicampus.it • m.pagnano@unicampus.it
17:30	18:00			

Meetings (with invitation)				
14:30	15:00	ABEC meeting	• Daniel Atwine (MUST) • June Madete (KU)	• daniel.atwine@must.ac.ug
15:00	15:30			
15:30	16:00			
16:00	16:30			

Wednesday 11/02	One health approach for human medicine			
Start	**End**	**Topic**	**Responsible**	**Note**
08:30	09:00	Context based design of medical devices	• Sudesh Sivarasu (University of Cape Town) • Robert Ssekitoleko (Makerere University) • Alan Fabbri (UNIBO)	• Sudesh.Sivarasu@uct.ac.za • rsseki@gmail.com • alan.fabbri3@unibo.it
09:00	09:30			
09:30	10:00			
10:00	10:30			
10:30	11:00	Healthy Break		
11:00	11:30	Health technology management	• Stefano Severi (UNIBO) • Caterina Giuliani (UNIBO) • Kennet Iloka (KU) • Phoebe Khagame (OXYALL)	• ILOKA.KENNETH@ku.ac.ke • caterina.giuliani6@unibo.it • stefano.severi@unibo.it • phoebe.khagame@oxygenalliance.org
11:30	12:00			
12:00	12:30			
12:30	13:00			
13:00	13:30			
13:30	14:00	Light Lunch		
14:00	14:30			
14:30	15:00	AI in Biomedicine	Dawit Haile (Addis Ababa University)	• dawit.assefa@aau.edu.et
15:00	15:30			
15:30	16:00	One health in patients management	George Otieno (KU)	• OTIENO.GEORGE@ku.ac.ke
16:00	16:30			
16:30	17:00	Healthy Break		
17:00	17:30	The UBORA platform	Chiara Delmonte (UNIPI)	• c.delmonte@studenti.unipi.it
17:30	18:00	HANDS ON		
18:00	18:30			
18:30	19:00			

Workshops				
17:30	18:00	Workshop on Computational modelling	Matteo Falanga (UNIBO)	matteo.falanga2@unibo.it
18:00	18:30			

Meetings (with invitation)				
14:30	15:00	Afya Moja Training for project writing	Sara Cinelli (UCBM)	
15:00	15:30			
15:30	16:00			
16:00	16:30			

Thursday 12/02	One health approach in Agri-vet			
Start	**End**	**Topic**	**Responsible**	**Note**
08:30	09:00	One-health Technologies in agriculture	Purity Nguhiu (KU)	nguhiu.purity@ku.ac.ke
09:00	09:30			
09:30	10:00			
10:30	10:30			
10:30	11:00	Healthy Break		
11:00	11:30	One-health technologies in veterinary medicine	• Michael Gicheru (KU) • Vittorio Sedda (CAMPUS BIO-MEDICO SpA)	• gicheu.michael@ku.ac.ke ; muitaku@gmail.com • v.sedda@cbm-spa.it
11:30	12:00			
12:00	12:30			
12:30	13:00			
13:00	13:30			
13:30	14:00	Light Lunch		
14:00	14:30			
14:30	15:00	Cultural Activities		
15:00	15:30			
15:30	16:00			
16:00	16:30			
16:30	17:00			
17:00	17:30			
17:30	18:00			
18:00	18:30			
18:30	19:00			

Friday 13/02	One health & Society			
Start	**End**	**Topic**	**Responsible**	**Note**
08:30	09:00	Ethics in One Health	• Judith Kimiywe (KU) • Daniel Atwine (MUST)	• Kimiywe.judith@ku.ac.ke • daniel.atwine@must.ac.ug
09:00	09:30			
09:30	10:00			
10:30	10:30			
10:30	11:00	Healthy Break		
11:00	11:30	Management of public health	Margaret Keraka (KU)	KERAKA.MARGARET@ku.ac.ke
11:30	12:00			
12:00	12:30			
12:30	13:00	Climate and environmental changes: Implications for infectious diseases diagnosis	Niyi Osuntoki (University of Lagos)	niyiosuntoki@yahoo.co.uk
13:00	13:30			
13:30	14:00	Light Lunch		
14:00	14:30			
14:30	15:00	Project presentation	Carmelo De Maria (UNIPI)	
15:00	15:30			
15:30	16:00			
16:00	16:30	Healthy Break		
16:30	17:00	Closing and award ceremony	June Madete (KU)	
17:00	17:30			

School Organizers

Dr. June Madete – Kenyatta University

June Madete is an enthusiastic and dynamic engineer, researcher, and senior lecturer with extensive experience in biomedical engineering education and research. Her speciality is Medical device design and Invention education. She received her PhD in medical engineering, specialising in biomechanics, motion capture, imaging studies, and patient data collection. Her unwavering commitment to developing biomedical engineering in Africa through knowledge and skill transfer is genuinely inspiring.

She is an academic scholar at Rice University's Department of Bioengineering in the Global Medical Innovation graduate programme, where she is a co-instructor for the 2024-2025 academic year. She went on to be the first director of the Master's of Medical Device Innovation MSC in KU.

She is also an academic within the biomedical engineering programme at Kenyatta University. Her role as a mentor to students, teachers, lecturers, engineers, and medical professionals has had a profound impact on engineering across the region.

As a qualified biomedical engineer, Dr. Madete is passionate about innovation and capacity building. As such, she is involved in several projects, including the invention education project with Rice 360, East African bio-design in collaboration with Stanford Bio-design, the University-Based Open Biomedical Engineering Platform (UBORA), and the African Biomedical Engineering Mobility (ABEM) project that aims to capacity build students and staff on biomedical engineering across Africa. She continues to collaborate with various universities to develop curricula, organise various design workshops and schools, and bring together BME universities to network through the BMEIdea Meetings. As a complex and exciting field, BME offers substantial potential for research and innovation, and June aims to be at the forefront of its exploration, leveraging the theoretical knowledge gained from her doctoral studies and years of practice.

Dr. Madete's role as a consultant is a testament to her ability to apply theoretical knowledge in practical settings. Her strong analytical and observational skills have been instrumental in developing curricula for institutions including Muranga University, the Technical University of Mombasa, and the Kenya Medical Training College in Nairobi. Her work as a mentor and judge at Total Kenya, American Society for Mechanical Engineers (ASME), Makerspace hackathon, and Villgro Africa, as well as her role as a Technical advisor to the NEST 360 project, has further expanded her network and deepened her understanding of the BME ecosystem in the region.

Prof. Carmelo De Maria – University of Pisa

Carmelo De Maria is an Associate Professor in Bioengineering at the Dept. of Information Engineering of the University of Pisa (Italy) and carries out his research in the Biofabrication Laboratory of the Center "E. Piaggio" of the same Institution. He is the author of several peer-reviewed papers, and he is involved in research projects funded by public and private entities, focused on the AI-enhanced 3D/4D printing of biomaterials and biological materials for the development of advanced therapies and innovative medical devices. Finally, De Maria is active in international cooperation to increase the access to safe and sustainable medical technologies in low-resource settings.

Holistic One Health

Prof. Arti Ahluwalia – University of Pisa

This lesson explores One Health as a holistic framework for engineering and technological design, while explicitly questioning human-centred assumptions that have shaped modern innovation.
Moving beyond paradigms such as Industry 5.0 and Society 5.0, the course invites students to rethink design, computation, and artificial intelligence as tools that can support ecosystem resilience, interspecies wellbeing, and long-term planetary health, rather than solely human convenience or economic growth.
The course also discusses sentience, consciousness, and non-human agency, encouraging students to reflect on ethical responsibility, equity, and the limits of anthropocentric thinking. Group activities and case studies will be used to challenge students to design solutions which favour the health of all living systems, not just humans.

Arti Ahluwalia is Full Professor at the Department of Information Engineering, University of Pisa. She is involved in leveraging biomedical technologies and education for health equity and has contributed to the creation of the "Africa Biomedical Engineering Consortium" (www.abec-africa.org), dedicated to improving health in Africa through the training of biomedical engineers and the UBORA platform (www.ubora-biomedical.org) for collaborative design of safe, open medical technology. She also contributes to development of technologies and teaching resources for improving animal welfare through the 3Rs Principles (Replacement, Refinement, Reduction), founding the EU3Rnet (https://eu3rnet.org/)and promoting 3Rs in research in Europe and across the globe.

One-health and the sustainable development goals

Prof. Fidelis Kilonzo – Kenyatta University

This plenary explores how curiosity and creativity cultivates innovation for One Health challenges and Sustainable Development Goals. Using real examples from Kenya—including ivermectin's unexpected impacts on soil ecosystems, IoT-based water quality monitoring, and locally-fabricated building materials—the session demonstrates how curiosity-driven, mastery-based learning enables students to address complex problems at the human-animal-environment interface. Participants will learn practical strategies to preserve curiosity, develop coach-ability across disciplines, leverage local resources for innovation, and connect their work to SDG targets. The session challenges traditional examination-based education that suppresses creativity, offering instead a pathway for broad-based participation in solving urgent One Health challenges facing communities globally.

Dr. Eng. Fidelis Ndambuki Kilonzo is a distinguished Environmental Engineering practitioner and academic leader with over 28 years of progressive experience in engineering practice, education, environmental management, and institutional leadership. Dr. Kilonzo served as a Visiting Professor and Fulbright Scholar-in-Residence at the College of Engineering and Computational Sciences, New York Institute of Technology (2024/2025), where he continues to advance international perspectives on engineering education. His leadership extends across multiple high-impact roles including Board Member of the Global Tourism Resilience and Crisis Management Centre Eastern Africa, member of the Management Board of the Kenya Education Network, and Steering Committee Member of Stanford University Byers Center for Biodesign's East Africa Biodesign Program. He is a Washington Accord Assessor by the Engineers Board of Kenya and serves on the Blue-Ribbon Committee of the African Skills and Development Group.
A registered Professional Engineer and active member of the Institution of Engineers of Kenya, Dr. Kilonzo chaired the Agriculture Subcommittee of IEK's Policy, Research and Advocacy Committee. He also contributes to the Kenya Bureau of Standards' Sanitation and Water Treatment Technical Committee, bringing practical expertise from his extensive background as a Compliance and Enforcement Officer, and gazetted Environmental Inspector with NEMA.
Dr. Kilonzo holds a joint Doctorate in Engineering from Free University Brussels, Belgium and IHE-Delft Institute for Water Education, Netherlands, along with Master's degrees from Lüneburg University, Germany and Ghent University, Belgium. His undergraduate degree in Agricultural Engineering is from Jomo Kenyatta University of Agriculture and Technology. His current passion in in Ethics of Innovation and the implementation on the FAIR and CARE principles in co-creating Human-centered design projects.

The role of biomedical engineer in Global Health

Prof. Leandro Pecchia – University Campus Biomedico of Rome

Biomedical engineering has been a key enabler for biology and medicine over the past 40 years, primarily through medical devices. Today, health systems face unprecedented challenges, both locally (demographic changes, population ageing) and globally (health emergencies, pandemics, climate change). Our community must now focus on global health and healthcare sustainability. The WHO Strategic Plan 2025-2028 emphasizes the need for climate-resilient health systems and reducing healthcare's carbon footprint. For example, potential carriers of diseases like the Nila Virus and Malaria have been found in non-endemic areas, and healthcare systems are responsible for 5% of EU CO2 emissions.

A report from a leading medical device manufacturer estimates that by 2040, one-fourth of Europe's population will need to work in healthcare to meet the demands of an aging population. This highlights the urgent need for innovative technologies to support healthcare workers, leveraging robotics, AI, and IoT to reduce time spent on routine tasks.

To address these challenges, it is essential to rethink healthcare service organization and how health technology can be sustainably adopted. BME must collaborate with sustainability experts and global health experts to reorganize healthcare services effectively. The adoption of innovative technologies must be accompanied by a reorganization of services to ensure safety, efficiency, and sustainability.

In this talk, Professor Pecchia will overview his recent work as WHO Innovation Manager during COVID and his involvement in major projects like GATEKEEPER, ODIN, EPoCA, Enkore, GRACE, and Afya Moja. These projects aim to bridge research and global health ecosystems across various phases of medical device lifecycles, from design and manufacturing to clinical validation and management.

Leandro Pecchia is Chair of Biomedical Engineering at the University Campus Bio-Medico (UCBM) in Rome, Italy. At UCBM, he is the Vice-Rector for the Research and directs the “Intelligent technologies for health and wellbeing” and the Center for “Technology for Global Health”. Since December 2021, the Italian Minister of Health appointed Prof Leandro Pecchia as one of the three medical device experts of the Technical and Clinical Committee of the Ministry of Health.

From 2020 to September 2023, he worked as Innovation Manager for the World Health Organization (WHO), Emergency program (WHE) Infection Prevention and Control (IPC) unit. Since September 2013, he has been professor of biomedical engineering at the University of Warwick, UK, where he still co-direct the Applied Biomedical Signal Processing and Intelligent eHealth Lab (ABSPIE). From 2010 to 2013, he worked with the University of Sheffield and the University of Nottingham, in the UK.

Fundamentals of Digital Fabrication

Carmelo De Maria – University of Pisa

Pierpaolo Fucile – University Campus Biomedico of Rome

The lecture will introduce the fundamentals of Additive Manufacturing (AM) as an appropriate technology for local production of tools and products. In the first part, the various AM technologies will be analysed in terms of physical principles, providing practical examples, and underlying pros and cons. In the second part, the 3D printing pipeline, from the 3D model to the 3D physical object will be illustrated.

Pierpaolo obtained his Bachelor's Degree in Biomedical Engineering at the University of Naples Federico II, focusing his work on superparamagnetic scaffolds for advanced Tissue Regeneration. He got his Master's Degree in Bioengineering with a focus on human tissues and cells at the University of Pavia, working on the bioprinting of nanocomposite scaffold for bone tissue regeneration. He got back to the University of Naples Federico II for his PhD in Biomorphological and Surgical Sciences, with a research project dealing with the generative design of multifunctional scaffolds with tailorable morphology for bone tissue engineering.
He then did his 4-years post-doc at MERLN Institute for Technology-Inspired Regenerative Medicine, in Maastricht (the Netherlands) in Lorenzo Moroni's group. His research there mainly focused on the development of RAVEN, a hardware-agnostic platform for open-source robotic bioprinting. He also developed a universal slicing software for the design and trajectory optimization of complex architectures in Regenerative Medicine, and worked on many projects involving engineering, materials science and computer science.
At UCBM, as an Assistant Professor, he will work on ENKORE, aiming at enabling accelerated innovation through an ecoDesign framework (circular, safe & sustainable by design), minimising the environmental impact, reducing the carbon footprint, and maximising the use and preservation of resources while promoting industries' prosperity.

Connectivity, Internet Complexity, and Data Security in Public Health

Prof. Gabriele Oliva - University Campus Bio-Medico of Rome

The lecture introduces the role of Internet connectivity and digital infrastructure in supporting public health services, particularly in geographically distributed and resource-constrained contexts. It provides a concise overview of the Internet as a complex, layered system, explaining how data is transmitted through routing, transport protocols, and physical infrastructures such as fiber-optic cables and satellite links. Different connectivity solutions are discussed, highlighting their relevance, strengths, and limitations for healthcare delivery.
The lecture then focuses on data security in healthcare, presenting real-world examples of ransomware, cyber-physical attacks, and medical data breaches affecting health services. Key cybersecurity concepts, including confidentiality, integrity, and availability, are introduced together with common threat categories targeting healthcare systems. The lecture concludes by emphasizing that effective cybersecurity in public health cannot rely solely on technological defenses, but requires a combined approach addressing technical, organizational, and human factors, supported by security culture and training to ensure resilient and trustworthy digital health services.

Gabriele Oliva received the M.Sc and the Ph.D. degrees in computer science and automation engineering from the University Roma Tre of Rome, Italy, in 2008 and 2012, respectively. He is currently an Associate Professor in automatic control with the University Campus Bio-Medico of Rome, Italy, where he directs the Complex Systems & Security Laboratory. (CoserityLab).
Since 2022, he is an Associate Editor for the IEEE Control Systems Letters Journal.
Moreover, he has been an Associate Editor for the Conference Editorial Board of the IEEE Control Systems Society and for PLOS ONE. His main research interests include distributed multi-agent systems, optimization, decision-making, and critical infrastructure protection.

Fundamentals of Artificial Intelligence: From Theory to Practice

Eng. Maria Elisabetta Pagnano & Eng. Claudia Ferraro – University Campus Bio-Medico of Rome

This session is structured in two complementary parts: a theoretical lecture followed by a hands-on workshop.
The first part introduces the fundamental concepts of Artificial Intelligence, with a focus on Machine Learning. Core paradigms of supervised and unsupervised learning will be presented, together with representative examples of classification, regression, and clustering problems. The objective is to provide participants with a clear understanding of how learning algorithms are structured, trained, and evaluated.
The second part consists of a practical workshop in Python, where participants will implement and test machine learning models using widely adopted libraries. Through guided coding sessions, theoretical concepts discussed in the lecture will be translated into practice, allowing attendees to directly explore data preprocessing, model training, and performance evaluation.
The overall goal is to equip participants with both conceptual foundations and practical skills necessary to approach AI development in a structured and critical way.

Maria Elisabetta Pagnano and Claudia Ferraro are PhD students in *Bioengineering, Applied Sciences and Intelligent Systems* at the University Campus Bio-Medico of Rome, within the Research Unit of Intelligent Health Technology for Health and Wellbeing, under the supervision of Prof. Leandro Pecchia.
Both hold a Bachelor's Degree in Biomedical Engineering from the University of Naples Federico II and a Master's Degree in Biomedical Engineering from the University Campus Bio-Medico of Rome.
Their research focuses on the development of Artificial Intelligence methods for healthcare applications. Maria Elisabetta works on AI models for the early diagnosis of rare diseases, with particular attention to ophthalmology and cardiology, aiming to anticipate diagnostic pathways and reduce underdiagnosis. Claudia focuses on AI-based decision support systems, developing predictive models for glucose monitoring through non-invasive approaches, including ECG-based signal analysis.
Together, they combine methodological expertise in machine learning with applied research experience in biomedical data analysis, contributing to the development of intelligent systems to support clinical decision-making and improve healthcare processes.

Fundamentals of AI: decision support systems

Prof. Vitoantonio Bevilacqua – Polytechnic University of Bari – Italy

The lecture presents the fundamentals of decision support systems based on supervised inferential models of machine learning and neural networks, with particular attention to training, validation, and testing strategies in the biomedical field. Examples of computer aided diagnosis and detection based on medical image processing will be shown and discussed.

Vitoantonio Bevilacqua is Full Professor in Bioengineering at the Electrical and Information Engineering Department of Polytechnic University of Bari (Italy) where is currently the Coordinator of the Master's Degree in Medical Systems Engineering, the Head of Industrial Informatics and Bioengineering Lab, the Principal Investigator of the NRRP project "BRIEF - Biorobotics Research and Innovation Engineering Facilities" and the Scientific Responsible of the spoke 2 of the NPCI to the NRRP project "D34H - Digital Driven Diagnostics, prognostics and therapeutics for sustainable Health care". In 2000 he was involved as Visiting Researcher in CAMERA (CAd Modeling Environment from Range Images) an EC funded Trans-Mobility of Researchers network and worked in Manchester (UK) at UK Robotics Ltd, in the field of geometric feature extraction and 3D objects reconstruction. In March 2019 he founded Apulian Bioengineering srl, a start-up and spin-off company of Polytechnic University of Bari and is currently its Chief Executive Officer. In September 2019 he joined the BioRobotics Institute of Scuola Superiore Sant'Anna di Pisa as Affiliate Professor. His teaching and research activity is focused on advanced diagnostic, therapeutics and rehabilitation systems based on intelligent processing and understanding of medical images, biosignals and bioinformatics. He published more than 270 international scientific papers.

The Oxygen Alliance's experience on Health technology Management

Phoebe Khagame – Oxygen Alliance

This talk presents Oxygen Alliance's systems-change approach to strengthening Health Technology Management (HTM) in low- and middle-income countries. It explores how investing in the broader healthcare technology ecosystem- across engineers, institutions, policymakers, manufacturers, and partners- drives sustained medical equipment uptime. Using tools such as situational analyses, the STEP-BME Maturity Model, embedded mentorship, and digital platforms, the session demonstrates how fragmented maintenance systems can evolve into resilient infrastructures. The role of multi-stakeholder partnerships in enabling practical change is highlighted throughout to encourage long-term systems transformation rather than short-term equipment fixes.

Phoebe Khagame is the Director of the Oxygen Alliance, a pan-African organization driving systems transformation in Health Technology Management and biomedical engineering capacity. She leads ecosystem-wide initiatives spanning situational analyses, workforce development, policy advocacy, and innovation platforms such as the BME-Konza app and BEST-LMIC Journal. Her work focuses on improving medical equipment uptime through sustainable, solutions.

IBD Biorespira: an efficient noninvasive high flow generator designed during COVID19 pandemic

Dr. Alan Fabbri – University of Bologna

When in early 2020 Covid19 spread out and became a pandemic infection, many hospitals could not provide adequate care for patients; the main critical aspects were the lack of intensive care bedsides and oxygen. Italian Biomedical Devices (IBD), a small innovative biomedical enterprise located in Forlì (Italy), actively faced the pandemics developing an efficient high flow generator, Biorespira. In this session we will go through the design and the working principles of such a device.

Alan Fabbri is currently a post-doctoral research fellow at the University of Bologna (UNIBO). After the PhD in Biomedical, Electrical and System Engineering in 2018, he got academic and industrial expertise combining simulations and lab experiments. From 2020 to 2025, as R&D engineer, he contributed developing and testing a high flow generator and a dialysis machine designed following the principles of reverse innovation.

Fundamentals of Healthcare Technology Management

Caterina Giuliani – University of Bologna

This presentation provides an overview of Healthcare Technology Management (HTM), outlining its fundamental principles, core processes, and key stakeholders. It examines the role of HTM throughout the entire life cycle of medical technologies, including planning, acquisition, maintenance, and end-of-life management. The talk highlights the importance of sustainability, patient safety, and effective resource optimization, with particular emphasis on low-resource and global health settings. By addressing both technical and strategic aspects, the presentation underscores how robust HTM practices contribute to improved healthcare delivery and long-term system resilience.

Caterina Giuliani is Project Manager for the Afya Moja project at the University of Bologna. She is a biomedical engineer with a background in medical device design. She is the Founder and CEO of the startup Bioverse srl. Since 2024, she has been collaborating with the Italian NGO Doctors with Africa CUAMM as a clinical engineer, focusing on the maintenance and management of medical equipment in Ethiopia.

AI in Biomedicine

Dr. Dawit Assefa – Addis Ababa University

The lecture presents key applications of Artificial Intelligence in biomedicine, highlighting its growing impact across the healthcare landscape. It examines AI-driven advances in medical imaging and diagnostics that enhance accuracy and early disease detection. The session also covers the use of AI in genomics for large-scale data analysis and precision medicine. Applications in drug discovery and digital pathology are discussed, showing how AI accelerates development and improves diagnostic workflows. The lecture also addresses AI-enabled clinical trial optimization, focusing on improved design, patient recruitment, and trial efficiency.

Dr. Dawit Assefa Haile is currently an Assistant Professor at the School of Biomedical Engineering, College of Technology and Built Environment, Addis Ababa University, Addis Ababa, Ethiopia. His major research interests include Medical Signal and Image Analysis, Color Image Processing, Artificial Intelligence, Scientific Computing, Optimization, and Bioinformatics. His collaborative research efforts involve translationally-driven imaging research that exploits advanced mathematical and image analysis assets for applications in preclinical and clinical biomedicine research.

One Health In Patient Management

Prof. George Otieno – Kenyatta University

The lecture is organized as: Review of the Interconnection Between One Health Domains; Application of One Health in Clinical Practice; Collaborative and Interdisciplinary Skills in One health; Towards enhancing Public Health and Community Outreach; One health in patient management: Case studies in Kenya.

George Otieno is Associate Professor, Health Informatics in the School of Health Sciences. He Holds PhD and Msc in Health Informatics from International University of Health and Welfare, Japan. He is member of EAB Global Faculty in Training for Biodesign, Stanford University, US. He is a Co-PI on Gates Foundation funded project tilted "Evaluation of the Effect of Training and Implementation of the Portable Ultrasound Devices among Mid-Level Clinicians on Maternal and Neonatal Health Services in Selected Counties in Kenya". He has won several grants and consultancies, Trains and teaches monitoring and evaluation of health programs, biostatics, health informatics and health systems strengthening. He is member of Kenya Health Informatics Association (KEHIA), Health Systems Management Association (HESMA).

One-Health Technologies in Agriculture

Prof. Purity Nguhiu – Kenyatta University

The lecture will be organized as follow: Introduction to One Health in Agriculture, Key One Health Challenges in Agriculture, Technological Innovations for One Health Agriculture, Innovative Approaches & Methodologies, Policy, Implementation, and Future Directions. Conclusion and Recommendations

Purity Nguhiu is Associate Professor at the Department of Animal Sciences, School of Agriculture and Environmental Sciences of Kenyatta University. She has expertise in Zoonosis, food and feed safety. Her mission is to impart knowledge and skills for improved and sustainable livestock production that ensures safety of foods of animal origin while safeguarding the livelihoods of the livestock farmers and the communities.

Her research niche has been in zoonotic parasitic infections, animal health and production priority areas of use of non-antibiotic growth promoters in livestock production alternative sources of proteins for animal feeds. Key research results are published in peer reviewed journals and are available online (ORCID ID: 0000.0002-1846-1126).

In teaching, she uses pedagogical approach, experiential and active learning for the students to gain the skills and knowledge. She encourages students share to their experiences and to disseminate their research findings in seminars, conferences and peer reviewed journals.

She participates in community outreach activities and services.

Agri Hub: Technology, Research and Sustainability for Innovative Agriculture

Dr. Vittorio Sedda – Campus Bio-Medico SpA - Italy

The Agri Hub of Campus Bio-Medico SpA is a high-tech greenhouse system dedicated to the development of innovative, sustainable and integrated agriculture. The Hub hosts advanced aquaponics and hydroponics technologies that combine plant and fish production within an efficient and controlled ecosystem. The model is based on the principles of the circular economy, optimizing the use of water, nutrients and energy while reducing waste. Designed as an open and flexible infrastructure, the Agri Hub supports applied research, innovation, production and training activities. It's a collaborative space open to stakeholders, institutions, students and researchers, created to host scientific projects, experimental initiative and shared activities.

Vittorio Sedda is an industrial biotechnologist at Campus Bio-Medico SpA, promoter of Campus Bio-Medico University of Rome and founder of Campus Bio-Medico University Hospital Foundation (Italy). He holds a degree in Industrial Biotechnology from the University of Tuscia in Viterbo and specializes in controlled environment agriculture with solid experience in the design and management of hydroponic and aquaponic systems. His work focuses on integrating plant production, aquaculture and water recirculation systems, developing innovative solutions at both pilot and industrial scales. He is currently responsible for the Agri Hub, an integrated facility that combines coltivation in aquaponics, hydroponics and applied research contributing to the development and testing of sustainable, high-efficiency production models.

Ethics in Research

Prof. Judith Kimiywe – Kenyatta University

In every discipline where new knowledge is generated, ethical conduct is not just a procedural requirement but it is also the foundation of credible and responsible research. Emerging issues such as digital data collection, artificial intelligence, cross-border collaborations, and participatory research with communities bring new ethical dimensions. Ethical awareness enhances the quality, credibility, and social value of research. What once seemed straightforward as protecting participants' privacy or obtaining consent, now requires rethinking in light of digital connectivity, global collaboration, and rapid innovation.

Judith is a Professor and a Certified Nutrition Specialist in the Department of Food, Nutrition and Dietetics at Kenyatta University. Her main goal is to bring about transformational change in livelihoods through translating nutritional science into sustainable action. Her research has centered on use of locally available resources and support systems to enhance food and nutrition security of individuals and communities to mitigate hunger, malnutrition and poverty. She has worked as a consultant for various international and UN agencies on development programs for informing policy for Kenya, Regional and internationally, and has made a significant contribution to formulation of country policies, strategic plans and guidelines. Has served as the Director of Center for Research ethics and chairperson Institutional Science Research Ethics Committee and a champion for NACOSTI/STI at Kenyatta University. She has contributed to the transformation on outlook of the research ethics in the emerging dispensation of innovative, digitalization of data collection, cross border collaboration and intra and interdisciplinary, community participatory approaches and strategies in conduct of research in institutions of higher learning.

Ethical Standards and Responsible Research in One Health

Dr. Daniel Atwine – Mbarara University of Science and Technology

The One Health approach integrates human, animal, and environmental health, providing a framework to address global challenges like zoonotic diseases, antimicrobial resistance, and climate-related health risks. Despite its growing use, ethical guidance in One Health research is often limited and inconsistently applied.

This lecture reviews current ethical standards and responsible research practices in One Health. Key principles include the interconnectedness of all species, holistic well-being, shared benefits, and acknowledgment of scientific uncertainty. It contrasts human-centered ethics with multispecies approaches, highlighting the importance of animal welfare, ecosystem integrity, and community engagement.

Frameworks such as COHERE, EAROH, and reflexive governance provide tools to guide ethical research, while sector-specific guidance addresses challenges like antimicrobial resistance and zoonotic disease control.

Recommendations include declaring ethical orientations, assessing benefits across humans, animals, and ecosystems, involving diverse stakeholders, and ensuring transparency and accountability. Integrating these practices allows One Health research to promote fair, responsible, and sustainable health outcomes for all species.

Dr. Atwine Daniel is a Ugandan medical doctor, epidemiologist, and senior scientist with over 18 years of experience in clinical and public health research spanning tuberculosis, HIV, malaria, maternal and child health, diagnostics, NCDs, and nutrition. He holds a PhD in Epidemiology, an MPhil in Science and Technology Studies, and an Advanced Master in Public Health Methodology. He co-chairs Uganda's National TB Research Committee, consults for MSF Epicentre, and serves on research ethics committees at Mbarara University. He is the Founder of SRF Research & Training Centres and Soar Research Foundation, chairs the Global South Trials Network (GLISTEN) focussed on NCD research and African Biomedical Engineering Consortium. He has promoted biomedical innovation in Africa, and contributed to the national research guidelines, and has 85+ publications and extensive teaching experience.

One health approach in public health management

Prof. Margaret Keraka – Kenyatta University

The presentation on One Health approach in public health will focus on how the intersection of human, animal, and environmental health can be used to address complex threats like zoonotic diseases (e.g., Ebola, rabies), antimicrobial resistance, and food safety. Key areas of focus will include surveillance, pandemic preparedness, climate change impact, ecosystem health, and collaborative, multidisciplinary policy.

Prof. Margaret is a full professor of Environmental and Population Health. She lectures in the following areas in Population Health, Medical Demography, Gender Health, Research Methods, Health Education and Promotion, Health project planning monitoring and evaluation. She has researched and published widely in field of population, environmental health and reproductive health. She has co- authored a book on Burden of Childhood Diarrhea from Water, Sanitation and Hygiene focusing on low-income settlements in Nairobi

Climate and Environmental Changes: Implications for Infectious Diseases Diagnosis

Prof. Niyi Osuntoki – University of Lagos

This lecture discusses the basis of climate and environmental changes. It looks at how climate and environmental changes disrupt the dynamic equilibrium between the critical biotic and abiotic components of the environment, and how this affects factors such as host-pathogen interactions, pathogen resistance, host susceptibility, virulence, vector range and pathogen genetics. The course also looks at how these alterations affect the host and pathogen parameters used in infectious diseases diagnosis.

Akinniyi (Niyi) Osuntoki is the Dean of the Faculty of Basic Medical Sciences at the College of Medicine, University of Lagos, Lagos, Nigeria. A Professor of Biochemistry with over three decades of professional experience, his work is at the intersection of molecular biology, biotechnology and bioengineering, with a focus on translating scientific research into practical health care innovations. He has contributed to the development of green technologies for pollution remediation and the production of probiotics and functional foods using food grade lactic acid bacteria isolates from indigenous fermented products. He leads a multidisciplinary team focused on developing low-cost healthcare solutions and technologies. They have been awarded 2 patents for some of their work in health technology innovation. He is an Adjunct Professor of Molecular Biology and Biotechnology at the Nigerian Institute of Medical Research and a Fellow of the Academy of Medical Sciences of Nigeria.