

# Physics Without Frontiers Sri Lanka: Machine Learning Applications in Physics with a Focus on Materials Science

16<sup>th</sup> -20<sup>th</sup> March 2026

Department of Physics, University of Sri Jayewardenepura

Day1	Agenda	Speaker
9-9.30	Inauguration	
9.30-10.00	Breakfast	
10.00-11.00	Overview of Machine Learning and AI in Materials Science	Dr Anita Halder
11.00-12.30	Basic machine learning models	Dr. P. A. Palamure
12.30-1.30	Lunch	
1.30-3.00	Hands on Session: Introduction to python tools and packages based on supervised learning techniques	Dr Sasani Jayawardhana
3.00-3.20	Refreshments	
3.20 -4.30	Hands on Session: Introduction to python tools and packages based on supervised learning techniques	Dr Sasani Jayawardhana
Day2		
9.00-10.30	Introduction to unsupervised learning	Dr. P. A. Palamure
10.30-11.00	Refreshments	
11.00-12.30	Hands-on session Unsupervised	Dr Anita Halder
12.30-1.30	Lunch	
1.30-3.00	Hands on Session: Materials data access & collection using Materials Project via an API key	Dr. Dilanga Siriwardane

3.00-3.20	Refreshments	
3.20-4.30	Hands on Session: Materials data access & collection using Materials Project via an API key	Dr. Dilanga Siriwardane
Day3		
9.00- 10.30	Hands-on Session: Full Machine Learning workflow (from data pre-processing to hyper-parameter tuning)	Dr Anita Halder
10.30-11.00	Refreshments	
11.00-12.30	Hands-on Session: Full Machine Learning workflow (from data pre-processing to hyper-parameter tuning)	Dr Anita Halder
12.30-1.30	Lunch	
1.30-3.00	Hands on Session: Composition & structure based featurization	Dr Sasani Jayawardhana
3.00-3.20	Refreshments	
3.20-4.30	Hands on Session: Composition & structure based featurization	Dr Sasani Jayawardhana
Day4		
9.00-10.00	Introduction to Deep learning via Artificial Neural Networks	Dr Sasani Jayawardhana
10.00-10.20	Refreshments	
10.20-12.30	Convolutional neural networks for microstructure characterization	Dr Sasani Jayawardhana
12.30-1.30	Lunch	
1.30 – 3.00	Handon session on Graph neural networks for materials applications	Dr. Dilanga Siriwardane
3.00-3.20	Refreshments	

3.20-4.30	Handon session on Graph neural networks for materials applications	Dr. Dilanga Siriwardane
Day5		
9.00-10.00	Hands-on materials problem solving using a Regression problem	Dr. Dilanga Siriwardane
10.00-10.20	Refreshments	
10.20-12.30	Hands-on materials problem solving using a Regression problem	Dr. Dilanga Siriwardane
12.30-1.30	Lunch	
1.30-3.00	Hands-on materials problem solving using a Classification problem	Dr Sasani Jayawardhana
3.00-3.20	Refreshments	
3.20-4.30	Conclusion – Overview of research and application areas	Dr Anita Halder
4.30-5.00	Panel discussion and Conclude remarks	All speakers