Mastering Deep Learning
Syllabus

Week/Module	Topics
Week 0	• Demo Video • Welcome to the course • Course Schedule • Grading Policy • Exam Details • FAQ
Week 1: Introduction to ANN and Deep Learning	• Introduction to Deep Learning • Representational Learning • Applications of Deep Learning • Challenges in Deep Learning • Deep Learning Frameworks • Google Colab
Week 2: Neural Networks, Hyperparameter and Model Building	• Introduction • Biological and Artificial Neural Network • Gradient Descent Algorithm • Perceptron Network • Activation Functions • Forward and Backward Propagation • Hyperparameters • Deep Learning Models • Keras Model Demo • TensorFlow Playground Demo • Case Study on Multilayer Perceptron
Week 3: Optimizers, Model Regularization and Auto Encoding	• Introduction • Optimizers and its types • Learning Rate Scheduling • Vanishing and Exploding Gradients • Overfitting and Underfitting Gradients • Overfitting Multilayer Perceptron Demo • AutoEncoders • Dimension Reduction • Stacked AutoEncoder • Unsupervided Pre-Training • Anomaly Detection

Week 4: Deep Learning and Convolutional Neural Network	• Deep Learning for Computer Vision • Issue with MLP for Computer Vision • Convolutions • Filters or Kernels • Feature Maps • Convolution Over Mutilple Channels • Pooling Layer • Flattening and Fully Connected Layer • Convolutional Neural Network • Receptive Field • Significance of Multiple Convolution Layers • Convolutional Neural Network:MNIST • Effect of Max Pooling Layer • CNN Architectire Vs MLP • 1*1 Convolution • Fully Convolution Network and Global Average Pooling • Tomato Leaf Classification Case Study
Week 5: CNN Architecture and Transfer Learning	• CNN Architecture • Types of CNN Architecture • Transfer Learning • Feature Extraction and Fine Tuning • Transfer Learning Case Study: Demo •

Final Exam Details:

If you wish to obtain a certificate, you must register and take the proctored exam in person at one of the designated exam centres. The registration URL will be announced when the registration form is open. To obtain the certification, you need to fill out the online registration form and pay the exam fee. More details will be provided when the exam registration form is published, including any potential changes. For further information on the exam locations and the conditions associated with filling out the form, please refer to the form.

Grading Policy:

Assessment Type	Weightage
Mid-term & End-term	25%
Final Exam	75%

Certificate Eligibility:

- 40% marks and above in internal assessment (mid-term & end-term)
- 40% marks and above in the final proctored exam

Disclaimer: In order to be eligible for the certificate, you must register for enrolment and exams using the same email ID. If different email IDs are used, you will not be considered eligible for the certificate.