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Yardi School of Artificial Intelligence, IIT Delhi

Thematic course buckets for PhD written comprehensive examination and MS(R) coursework requirements

(**PhD**: One course each from 3 of these buckets to be completed with marks at B grade or higher)

(**MS(R) in MINDS**: 6 credits from amongst these buckets to be completed)

I. Mathematics

3-0-0 AIL701: Mathematical Foundations of Machine Intelligence and Data Science

3-0-0 ELL780: Mathematical Foundations of Computer Technology

3-0-0 MTL704: Numerical Optimization

3-0-0 AIL711: Numerical Optimization

3-0-2 COL726: Numerical Algorithms

3-0-0 ELL706: Optimization for Electrical Engineers

3-0-0 AIL712: Multivariate Statistics

3-0-0 MTL766: Multivariate Statistical Methods

3-0-0 MTL717: Fuzzy Sets and Applications

3-0-0 MTL725: Stochastic Processes and Applications

3-0-0 MTL757: Introduction to Algebraic Topology

3-0-0 MTL763: Introduction to Game Theory

3-0-0 AIL801: Introduction to the Mathematics of Machine Learning

3-0-0 MTL799: Mathematical Analysis in Learning Theory

3-0-0 ELL719: Detection and Estimation Theory

3-0-2 APL703: Engineering Mathematics and Computation

3-0-2 AML702: Applied Computational Methods

3-0-0 APL771: Design Optimization and Decision Theory

3-0-0 APL872: Optimization Techniques

3-0-0 MTL860: Linear Algebra

3-0-0 COL756: Mathematical Programming

II. Machine Learning

3-0-2 COL774: Machine Learning

3-0-0 ELL784: Introduction to Machine Learning

3-0-0 ELL882: Large-Scale Machine Learning

3-0-0 ELL888: Advanced Machine Learning

3-0-0 AIL711: Deep Learning

3-0-0 AIL712: Reinforcement Learning

3-0-0 ELL729: Stochastic Control and Reinforcement Learning

3-0-0 COL776: Learning Probabilistic Graphical Models

3-0-2 ELL791: Neural Systems and Learning Machines

3-0-2 APL744: Probabilistic Machine Learning for Mechanics

3-0-2 APL745: Deep Learning for Mechanics

3-0-2 AIL723: Graph Machine Learning

III. Data Science

3-0-2 COL761: Data Mining

3-0-2 MTL782: Data Mining

3-0-2 COL764: Information Retrieval and Web Search

3-0-2 COL760: Advanced Data Management

3-0-2 AIL 741: Querying and Mining Graph Data (proposed)

3-0-2 AIL 742: Scalable Data Handling for ML (proposed)

2-0-2 CVL838: Geographic Information Systems

IV. Applications

3-0-2 COL772: Natural Language Processing

3-0-2 COL770: Advanced Artificial Intelligence

3-0-2 COL786: Advanced Functional Brain Imaging

3-0-0 ELL718: Statistical Signal Processing

3-0-0 ELL793: Computer Vision

3-0-0 COL780: Computer Vision

3-0-2 COL828: Advanced Computer Vision

3-0-0 ELL789: Intelligent Systems

3-0-0 ELL883: Embedded Intelligence

3-0-0 ELL885: Machine Learning for Computational Finance

3-0-0 ELL788: Computational Perception and Cognition

3-0-0 ELL890: Computational Neuroscience

3-0-0 ELL891: Computational Linguistics

3-0-0 MTL785: Natural Language Processing

3-0-0 AIL861: Special Topics in AI Applications (specific offering in Sem II 2023--24)

3-0-0 ELL795: Swarm Intelligence

3-0-0 ELL799: Natural Computing

3-0-2 COL778: Principles of Autonomous Systems

3-0-0 ELL884: Deep Learning for Natural Language processing

3-0-0 AIL861: Special Topics in AI Applications (specific offering in Sem II 2024--25)

3-0-0 AIL862: Special Topics in Computer Vision (specific offering in Sem II 2024--25)
