

# SYLLABUS

## MODULE 1

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### Introduction to AI: History and Current Developments

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#### Course Content

- History of Artificial Intelligence
- The basics of Artificial Intelligence, Artificial Neurons, Perceptrons, MLP, Voted Perceptrons
- Current developments of Artificial Intelligence: Topology, Architecture of Artificial Neural Networks

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## MODULE 2

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### Data Preprocessing and PCA

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#### Course Content

- Cleaning the data
- Selection of appropriate data
- Preprocessing methods and data forms
- Preprocessing with Principal Components Analysis

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## MODULE 3

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### Neural Networks and Families of Neural Networks

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#### Course Content

- Artificial Neural Networks (ANN)
- Models of ANN
- Families of ANN (Perceptrons, MLP, RNN, TLRN, GFF, RBFN, SOFM, etc)
- Creation of NN with various software: open source or not?
- Problems resolving with NN: Classification, Clustering, Prediction
- Applications

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## MODULE 4

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### Heuristics, Evolutionary Computation (GA), Hybrids

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#### Course Content

- Heuristics methods in computational intelligence: types, models
- Evolutionary Computation: genetic algorithms
- Hybrids of heuristic models, hybrids of Artificial Neural Networks and Heuristics
- Applications

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## MODULE 5

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### Current Issues in Shipping and AI Solutions

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#### Course Content

- Navigation
- Optimal control of ship, cargo, purchasing, costs, telecommunications, security
- AI solutions in back-office applications
- AI in corporate efficiency

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## MODULE 6

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### Effective AI Apps

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### Course Content

- New trends in AI in shipping