# Professional Training

## Professional Certificate Course in Applied Forecasting, Online

| Duration: | Workload: | Mode of Study: |
|---|---|---|
| 6 weeks | 10h/week | Self-paced online training |

**Only basic statistical knowledge is required to follow this course**

## CERTIFICATE COURSE:

### Applied Forecasting: Improving the Accuracy and Value of your Predictions

*Led by Prof. Spyros Makridakis, Director of MOFC at Institute For the Future, University of Nicosia, Dr. Pasquale Cirillo of MOFC at Institute For the Future, University of Nicosia, and Dr. Evangelos Spiliotis of the National Technical*
*University of Athens.*

Forecasts are needed for setting up inventory levels, constructing production or delivery schedules and in all types of planning: from budgeting to strategic. This course covers all types of forecasts and offers concrete information to business executives on how to improve the accuracy of their predictions. Such information is based on the findings of the M Competitions organized by Prof. Spyros Makridakis and the University of Nicosia.

## EXECUTIVE EDUCATION COURSE IN APPLIED FORECASTING:
## COURSE OUTLINE

### Week 0: Introduction to R and to the course
Session 0: Recorded Tutorial: Getting started with R
*Taught by Pasquale Cirillo*

### Week 1: Introduction to Forecasting
Session 1: Time Series Decomposition
Seasonality, trend, cycle and randomness, data relationships
*Taught by Spyros Makridakis*

Session 2: Forecasting and Uncertainty
Understanding, measuring and dealing with various types of uncertainty
*Taught by Spyros Makridakis*

### Week 2: Statistical Forecasting
Session 3: The M Competitions
Benchmarks, simple vs. sophisticated methods, combining forecasts, computational costs versus accuracy, the end of forecasting winter, simple ML methods
*Taught by Spyros Makridakis*

## Week 2: Statistical Forecasting (Cont.)

### Session 4: Statistical Forecasting Methods

Naïve methods, exponential smoothing models, and the Theta method

*Taught by Evangelos Spiliotis*

***First bi-weekly assignment (to be submitted at the end of week 4)***

## Week 3: Explanatory and Machine Learning Methods

### Session 5: Linear Regression

Using explanatory variables to predict the future

*Taught by Spyros Makridakis*

### Session 6: Machine Learning, Deep Learning, Cross Learning, and Hybrid Models

An introduction to Machine Learning, its variants, and its state-of-the-art implementations

*Taught by Evangelos Spiliotis*

## Week 4: Advanced Machine Learning Methods with Applications

### Session 7: Advanced Machine Learning Methods

Neural Networks and Regression Trees

*Taught by Evangelos Spiliotis*

### Session 8: Case study

Application of Machine Learning methods in energy prices forecasting

*Taught by Evangelos Spiliotis*

***Second bi-weekly assignment (to be submitted at the end of week 6)***

## Week 5: Tail Risk and uncertainty

### Session 9: Extremes and Fat tails

*Taught by Pasquale Cirillo*

## Week 5: Tail Risk and uncertainty (Cont.)

### Session 10: Tail risk and modeling

*Taught by Pasquale Cirillo*

## Week 6: Forecasting at work

### Session 11: Some successful forecasting applications

*Taught by Pasquale Cirillo*

### Session 12: The limits of forecasting

*Taught by Pasquale Cirillo*

***Final assignment (to be submitted two weeks after the end of the course)***