Module Code	STU33010
Module Name	Applied Forecasting
ECTS Weighting[1]	5 ECTS
Semester taught	Semester 1
Module Coordinator/s	Prof Rozenn Dahyot
Module Learning Outcomes	On successful completion of this module, students will be able to: LO1. Define and describe the different patterns that can be found in times series and propose algorithms and statistical models that are suitable for their analysis. LO2. Program, analyse and select the best model for forecasting. LO3. Interpret output of data analysis performed by a computer statistics package. LO4. Compute predictions with their confidence intervals using the selected model.
Module Content	Introduction to forecasting; ARIMA models, data transformations, seasonality, exponential smoothing and Holt Winters algorithms, performance measures. Use of transformations and differences.
Teaching and Learning Methods	Lectures, online (e.g. Discussion Board)

Assessment Details[2]

Assessment Component	Brief Description	Learning Outcomes Addressed	% of total	Week set	Week due
A	R markdown (i.e. report + code) analysis of time series with Holt-Winter algorithms	LO1-4	35%	2	6
B	R markdown (i.e. Report + code) Forecasting competition with ARIMA models	LO1-4	35%	6	11
C	Maths of forecasting	LO1/LO3/LO4	30%	11	12

Reassessment Details	Examination (2 hours, 100%)

Contact Hours and Indicative Student Workload

Contact Hours (scheduled hours per student over full module), broken down by:	**33 hours**
lecture	33 hours
laboratory	0 hours
tutorial or seminar	0 hours
other	0 hours
Independent study (outside scheduled contact hours), broken down by:	**83 hours**

[1] TEP Glossary
[2] TEP Guidelines on Workload and Assessment

preparation for classes and review of material (including preparation for examination, if applicable)	40 hours
completion of assessments (including examination, if applicable)	43 hours
Total Hours	**116 hours**

Recommended Reading List	Forecasting: principles and practice online book by R. Hyndman and G. Athanasopoulos http://otexts.com/fpp/
Module Pre-requisites	**Other/alternative non-module prerequisites:** statistics (linear regression), R programming languages.
Module Co-requisites	
Module Website	https://www.scss.tcd.ie/Rozenn.Dahyot/RzDST3010.html
Last Update	01/07/2019 by Rozenn Dahyot