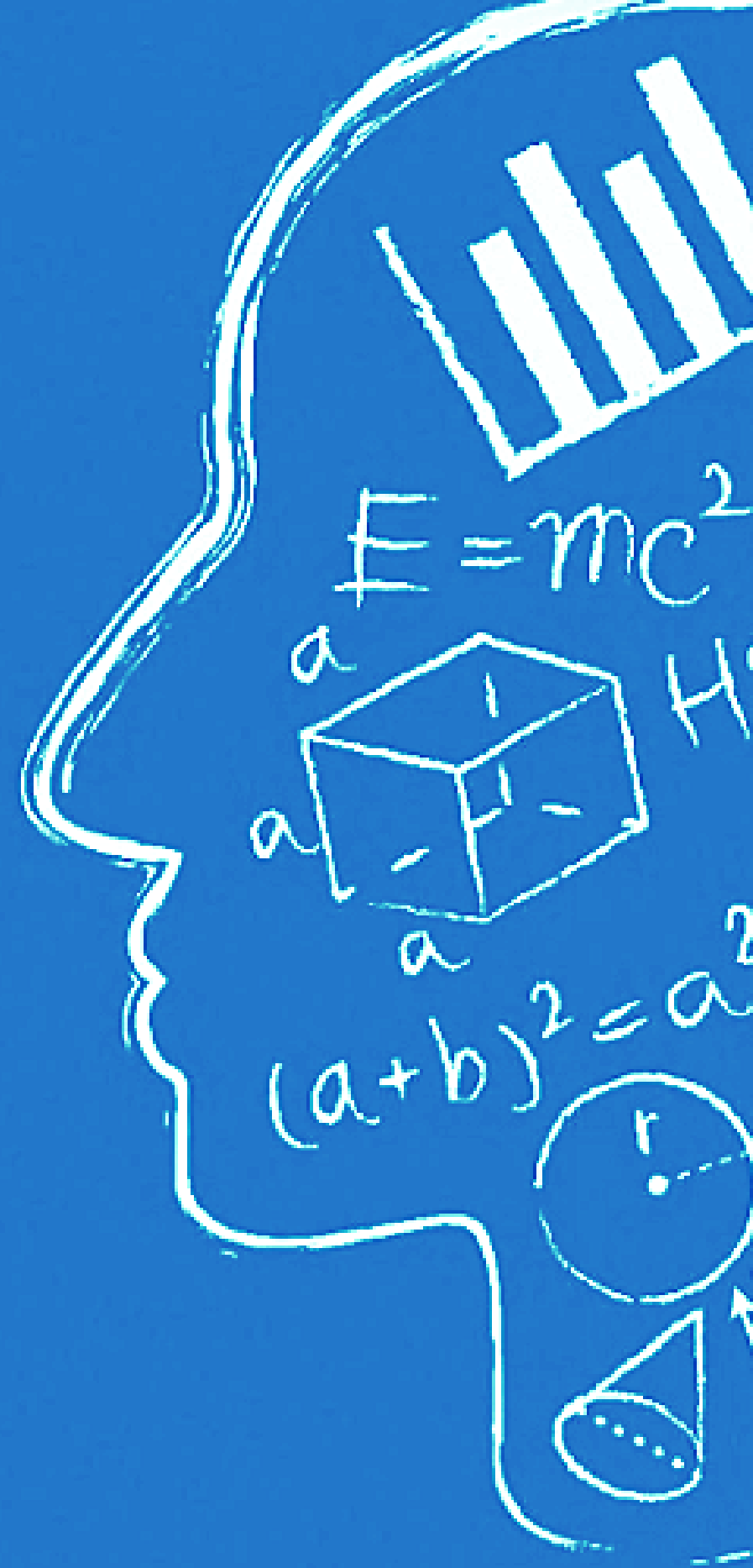# SEMINAR

CEAUL & CEMAT

AN ADDITIVE SHARED FRAILTY MODEL USING THE NON-CENTRAL CHI-SQUARED DISTRIBUTION WITH ZERO DEGREES OF FREEDOM

ABSTRACT:

Shared frailty models are particularly useful in recurrent events analysis to account for the within-subject dependence among event times. Usually, such models rely on the assumption that frailty acts multiplicatively on the hazard/rate function. However, in certain scenarios, it may be more realistic for frailty to be included in an additive way. Furthermore, the unobserved heterogeneity may be due to some subjects who are non-susceptible to the event of interest, and others with a varying degree of susceptibility.

This talk aims to introduce a new additive shared frailty model for recurrent gap time data, characterized by a Weibull rate function derived from a non-homogeneous Poisson process and by a mixed frailty following a non-central chi-squared distribution with zero degrees of freedom. It will be shown that the resulting model may have a competing risk interpretation. Additionally, the Weibull rate model and the classical homogeneous Poisson process are two special cases of degenerate frailty. A frequentist approach for parameter estimation using the maximum likelihood method will be discussed. An application to a well-known data set is provided for illustrative purposes.

Note: The seminar will be taught in Portuguese, but the presentation slides will be in English.
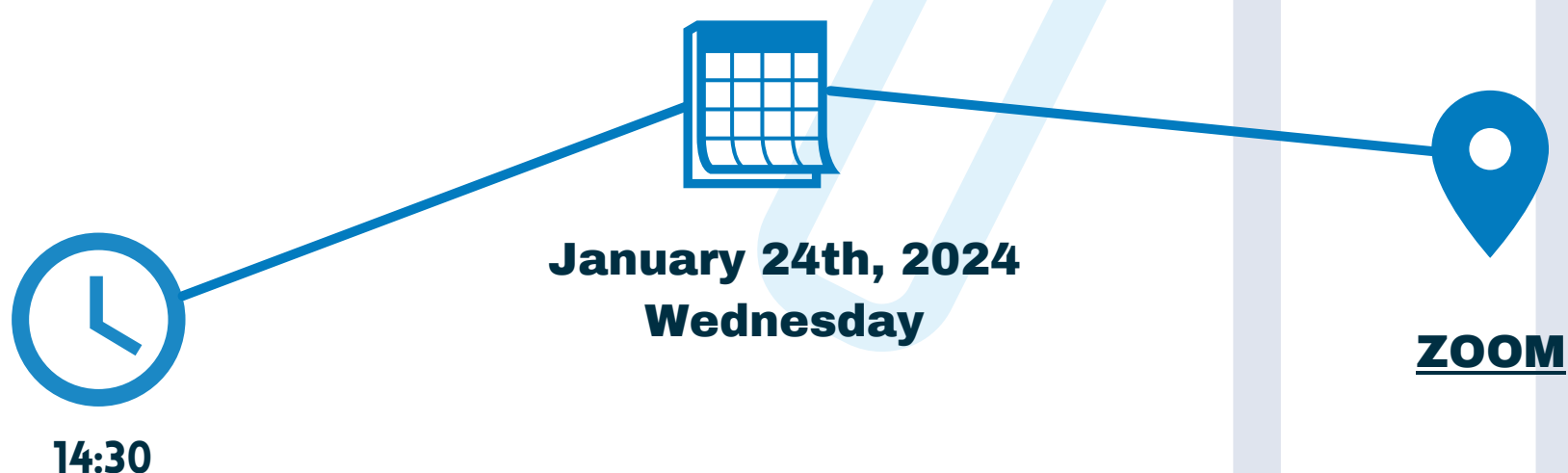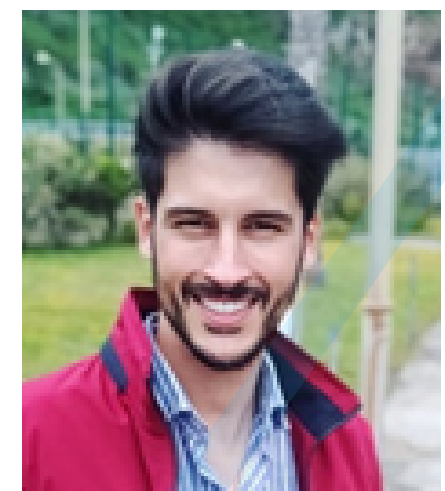
SPEAKER

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Ivo Sousa-Ferreira recently obtained his PhD in Statistics and Operational Research from the Faculty of Sciences, University of Lisbon. He is an integrated research member of the Centre of Statistics and its Applications (CEAUL), where he carries out research within the field of Survival Analysis. Currently, he works as an Invited Assistant Professor at the Department of Mathematics, Faculty of Exact Sciences and Engineering, University of Madeira, teaching curricular units in Statistics and Data Analysis for students in Health and Social Sciences.

January 24th, 2024
Wednesday

ZOOM

14:30