

# MATH0064 Interest Rates and Credit Modelling

<i>Year:</i>	2022–2023
<i>Code:</i>	MATH0064
<i>Value:</i>	15 credits (= 7.5 ECTS credits)
<i>Term:</i>	2
<i>Structure:</i>	On campus
<i>Assessment:</i>	80% examination and 20% coursework. Students must achieve at least 50% to pass this course.
<i>Normal Prerequisites:</i>	Familiarity with stochastic calculus and the basics of mathematical finance.
<i>Lecturer:</i>	Prof C Marinelli

## *Course Description and Objectives*

This is a 30-hour introductory course on interest rate modelling and the pricing of fixed-income assets. The first part of the course focuses on the modelling of the term structure of interest rates. During the second part of the course, the concept of credit risk and some standard credit risk models are introduced.

## *Recommended Text*

Damir Filipović, *Term-Structure Models*, Springer, 2009.

## *Detailed Syllabus*

Basic notions on interest rates and bond markets. Short-rate models. Heath-Jarrow-Morton models.

Structural models of default: Black-Scholes-Merton model, first-passage models of default. Hazard function approach: hazard function and hazard rate, bond pricing with recovery at maturity and at the default time. Pricing of simple defaultable claims.