**Program**

**Monday 26/2**

**08h30-09h: Registration**

**09h-11h30** Nguyen Nhu Thang *Nonlocal Evolution Equations: Nonlocal Derivatives and Resolvent Functions*

**11h30-13h30**: Lunch

**13h30-16h30**: Doan Thai Son *Stability Differential Equations*

**Tuesday 27/2**

**9h-11h30** Nguyen Nhu Thang *Nonlocal Evolution Equations: Resolvent Operators and Their Fundamental Properties*

**Afternoon: Free**

**Wednesday 28/2**

**09h-11h30** Nguyen Nhu Thang *Nonlocal Evolution Equations: Solvability and Asymptotic Behavior of Mild Solutions*

**11h30-13h30**: Lunch

**13h30-16h30**: Doan Thai Son *Stability of Integral Differential Equations*

**Abstract**

In recent decades, the theory of **nonlocal evolution equations** has garnered significant attention. These equations involve a novel concept: **nonlocal derivatives**, which fundamentally distinguish them from ordinary differential equations (ODEs). Unlike ODEs, where standard methods and well-known results apply directly, nonlocal evolution problems exhibit intriguing phenomena due to the nonlocality of their derivatives.

In this lecture series, we embark on a journey into the fascinating world of nonlocal evolution equations. We aim to provide interested readers with a comprehensive understanding, requiring only minimal knowledge of differential equations and functional analysis. Let’s explore the key components of this lecture series:

**Lecture 1: Nonlocal Derivatives and Resolvent Functions**

* In this initial lecture, we delve into the world of **nonlocal derivatives**—a concept associated with specific singular kernels. Our exploration begins by revisiting the definitions of these derivatives and their role in solving fundamental equations. Additionally, we explore the significance of **resolvent functions**, which naturally generalize the exponential function in ordinary differential equations (ODEs) and the Mittag-Leffler functions in fractional differential equations. These resolvent functions play crucial roles in studying scalar nonlocal evolution equations, laying the groundwork for further investigation of nonlocal evolution equations.

**Lecture 2: Resolvent Operators and Their Fundamental Properties**

* + Here, we reconstruct the resolvent operators within the framework of Banach spaces. Our approach relies on the semigroup theory and the subordination principle. We delve into essential properties of resolvent operators, including the variation of constants formula and the boundedness of these operators.

**Lecture 3: Solvability and Asymptotic Behavior of Mild Solutions**

* + In our final lecture, we address the solvability and asymptotic behavior of mild solutions for a certain class of nonlocal evolution equations on Banach spaces. By employing fixed-point arguments and utilizing the key properties of resolvent functions, we extend some classical results from the theory of differential equations.

**Lecture 4: Stability of Differential Equations**

**Lecture 5: Stability of Integral Differential Equations**