جامعة الكويت
KUWAIT UNIVERSITY

# SEMINAR

## DEPARTMENT OF PHYSICS

**SPEAKER** : **Eissa Alnasrallah**

**TITLE** : **How natural are "natural" modifications of physical theories: An example between generalized uncertainty principle and modified gravity**

**DATE** : **Wednesday, April 23rd , 2025**

**TIME** : **12:45 P.M – 13:50 PM**

**PLACE** : **South Campus, Building C2, Floor - 2, Room No: 190**

## Abstract

Cosmological observations indicate that almost 95% of the universe is still inexplicable by our current physical models. Our current understanding stands on two main theories: general relativity, describing gravitational interactions, and quantum mechanics, describing matter and its other interactions. The incompatibility of these two theories has inspired the search for a quantum gravity model that can shed light on the dark side of the universe. One naturally looks for modifications of the current theories that extend their range of application to other phenomena. However, it remains a question of how "natural" these modifications are when explored from a different setting. In this talk, I will use the cosmological model as a guiding tool to compare between modifications of the uncertainty principle in quantum mechanics to the generalized uncertainty principle (GUP) and modified theories of gravity. I will present an introduction to both of the areas and then show how the derivation of cosmological equations from these models raises questions on the naturalness as viewed by the other.