



**UWI**

ST. AUGUSTINE  
CAMPUS

FACULTY OF SCIENCE  
& TECHNOLOGY

# DEPARTMENT OF PHYSICS

SEMINAR SERIES: 2024/2025

## Evaluating and Enhancing Cardiovascular Disease Risk Stratification in Trinidad and Tobago



Presenter: Ms. Sasha Ramkhelawan

Date: Monday 5<sup>th</sup> May 2025

Time: 11:00 a.m.

Venue: Life Sciences Conference Room

## **Title: Evaluating and Enhancing Cardiovascular Disease Risk Stratification in Trinidad and Tobago**

### ABSTRACT

Cardiovascular disease (CVD) is the leading cause of death globally, accounting for one-third of all deaths. The World Heart Federation and the American Heart Association reported that 80% of CVDs can be prevented by addressing risk factors. As a result, risk factors play a key role in risk stratification, which is the use of tools, such as models, equations or scores, to estimate an individual's risk of developing CVD over time. These tools, however, tend to be valid in the population from which, and for whom, they were derived, and are often not available for populations in the developing world since CVD risk factors are influenced by ethnic and geographic factors. In the Caribbean country of Trinidad and Tobago, which has a CVD mortality rate of 33%, there are limited local CVD risk tools available. In addition, the tools available have not been validated on the population.

The aim of this research work is, therefore, to evaluate and enhance CVD risk stratification in Trinidad and Tobago for the reduction of CVD incidence and mortality. The performance of existing local CVD risk tools on this population was assessed and it was found that these tools were able to identify less than half of CVD patients as high-risk. Given that these tools underestimated the risk in CVD persons, an investigation into the epidemiology of CVD locally was conducted to determine any trends in CVD risk factor prevalences which could guide local tools. An extensive, high-quality dataset was then utilized for the determination of the most significant CVD risk factors in Trinidad and Tobago for subsequent use in the development of a country-specific 10-year CVD risk score. The performance of this risk score was evaluated and compared to that of other existing tools. Furthermore, machine learning, an increasingly used technique for the detection of diseases, was explored and used to build several classification models for CVD in Trinidad and Tobago. Lastly, the derived tools were applied to a Caribbean population to determine if it may be extended to similar populations.

This seminar focuses on the use of the Trinidad and Tobago dataset from the Eastern Caribbean Health Outcomes Research Network (ECHORN) cohort study for the determination of the strongest predictors of CVD in Trinidad and Tobago and the development of a country-specific 10-year CVD risk score. By developing a score using the risk factors that are associated with a CVD event locally, it is expected that high-risk individuals can be more accurately identified, thereby improving risk stratification in Trinidad and Tobago.