Webinar by Prof. Swaroop Nandan Bora, IIT Guwahati on 19 July 2020

by Manjil Saikia - Monday, July 13, 2020

https://gonitsora.com/webinar-snbora/

Gonit Sora is organising a webinar by **Prof. Swaroop Nandan Bora** of the **Indian Institute of Technology Guwahati** on **19th July 2020** at **12 noon IST**. The details and rules are given below.

Title: **Differential equations as they arise in large water bodies and how to solve them**

Abstract: *Water is essential to all in various ways. It is not only about its requirement in daily life such as drinking, washing, bathing etc., but also about its vast influence in many activities around the globe. Large water bodies such as oceans, lakes, rivers have paramount significance from a wide range of perspectives. We know very well that differential equations play a very vital role in converting many physical problems into mathematical problems which can be solved to describe those physical situations almost precisely. Study of ocean waves and its importance with regard to a number of activities have been evolving since long. Installation of suitable structures, offshore (like drilling platform, floating airports, windmills) and coastal (like breakwaters to protect harbours, ports and shorelines) as well as motion of ships, submarines can be aptly managed by formulating and solving appropriate boundary value problems. Obviously, the main requirement is to solve the differential equations that govern the processes and analyze the results so as to provide feasible suggestions. In a similar manner, rivers can be termed as lifeline for millions of people. In this context, it is considered very crucial to discuss various river issues such as floods, sediment transport, water discharge, bank erosion, dam break etc., for everyone's benefit. Differential equations come to the rescue since they have the capability of handling most of these problems in an efficient manner to come up with practical solutions. Therefore, for study of river mechanics and to solve problems connected to river flows, it is very strongly felt that differential equations are almost indispensable. A precise mathematical model based on suitably chosen differential equation(s) and its solution will pave the way for encountering many relevant challenging issues.*

In the planned lecture, we will first try to realize the importance of differential equations through some examples and explanation, and how to formulate boundary value problems. Then we will touch upon some physical problems in oceans and rivers, discuss the associated formulations and solutions briefly so as to establish how powerful differential equations are in dealing physical problems.

About the speaker: *Swaroop Nandan Bora is a Professor in the Department of Mathematics, IIT Guwahati. Prof. Bora has had a stellar academic career, he did his early schooling from Balya Bhavan,*

Jorhat and then went to Cotton College to do his Pre-University and B.Sc. studies. He then did his M.Sc. from the University of Delhi, after which he joined the Technical University of Nova Scotia (now known as Dalhousie University) as a PhD candidate. He completed his PhD in 1998 and then joined IITG in 1999 and has been there since.

His research interests are in Wave-structure interactions, scattering and trapping of water waves, flows in porous media, sloshing, river mechanics, theoretical aspects of fractional differential equations. He has so far supervised fourteen PhD students, seven of whom have already been awarded the degree, another three are about to finish their PhDs and four more are in different stages. He has also mentored two postdoctoral fellows. He has held various important administrative positions in IITG as well as other institutes.

The talk will be suitable for a general audience (college students are specially welcome), and will be held online via Zoom. It will also be livestreamed on our Facebook page.

e-Certificates will be issued to registered participants who attend the talk.

Please read the rules of the Zoom meeting at this link**, before you register.** Due to a high volume of registration and emails, we will not answer queries which are already addressed in the rules.

To register submit the form at this link **before 12 noon IST 18 July 2020.**

A list of all past and future webinars are available at this link**.**
