REPORT ON ONLINE SPECIAL LECTURE SERIES IN MATHEMATICS, 2020 (OSLSM-2020)

Phase I -Lecture Codes: 01.B1 & 01.B2

Dates: 28.07.2020 [for 01.B1] & 29.07.2020 [for 01.B2].

Time: 05:30 pm to 7:00 pm [IST].

Topic: Stokes' theorem and differential forms

Target Audience: The lectures are meant primarily for the UG/PG students of Department of Mathematics of Netaji Subhas Open University [NSOU]. However, students of other universities and institutes, research scholars, faculties of different colleges/universities or any interested person were welcome to attend the lectures.

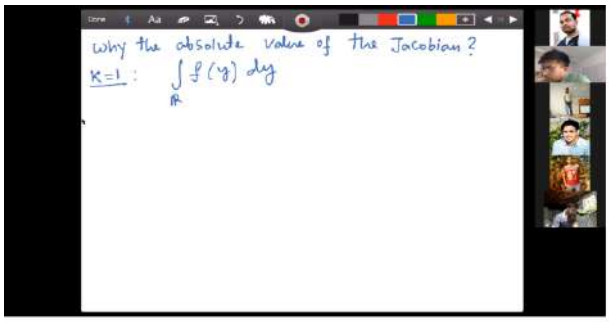
Technical Platform: The webinar was conducted using Zoom app through the LMS platform of ICT, NSOU. Technical Support was extended by M/s School Guru.

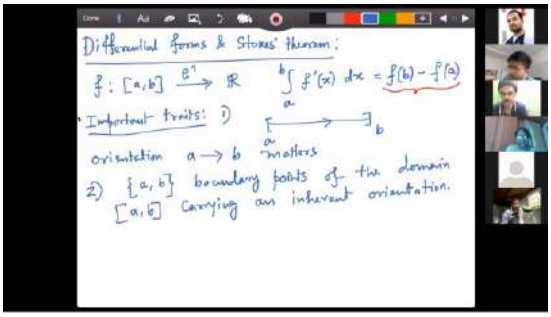
Speaker: Dr. Chiranjib Mukheree, Professor, Department of Mathematics, University of Munster, Munster, Germany.

About the speaker: After completing his B. Sc. in Mathematics and Theoretical Computer science from Chennai Mathematical Institute, Professor Mukherjee did his Ph. D. from University of Leipzig and Max-Planck Institute Leipzig under the supervision of famous Mathematician Professor Wolfgang König. He is also a research collaborator of Abel Prize winner Padma Bhushan Professor S. R. S. Varadhan.

He was Visiting Assistant Professor in the famous Courant Institute of Mathematical Sciences, New York University. He also held post-doctoral positions in University of Erlangen-Nuremberg, Technical University of Munich, WIAS Berlin. He has published several papers in reputed top class international journals. His areas of interest include Stochastic homogenization of non-linear partial differential equations, Large deviations and interacting Brownian motions in statistical mechanics, Hydrodynamic limits etc.

Abstract of the Lectures: Integration can be studied on many levels. Riemann integrals are defined for well-behaved functions on subsets of the real line. Lebesgue integrals provide a fairly general set up which allow a notion of integration for a wide class of functions over essentially any arbitrary set, not necessarily subsets of R^n. In these two lectures we will define a further notion of integration that are closely related to the geometry of the Euclidean space, such as the change of variables formula, line integrals, surface integrals, volume forms etc, finally culminating in the n-dimensional analogue of the fundamental theorem of calculus, namely Stokes' theorem. This is all enabled by a general theory of differential forms. Once defined and understood in the Euclidean set up, this theory extends very easily to a further general set up of manifolds.



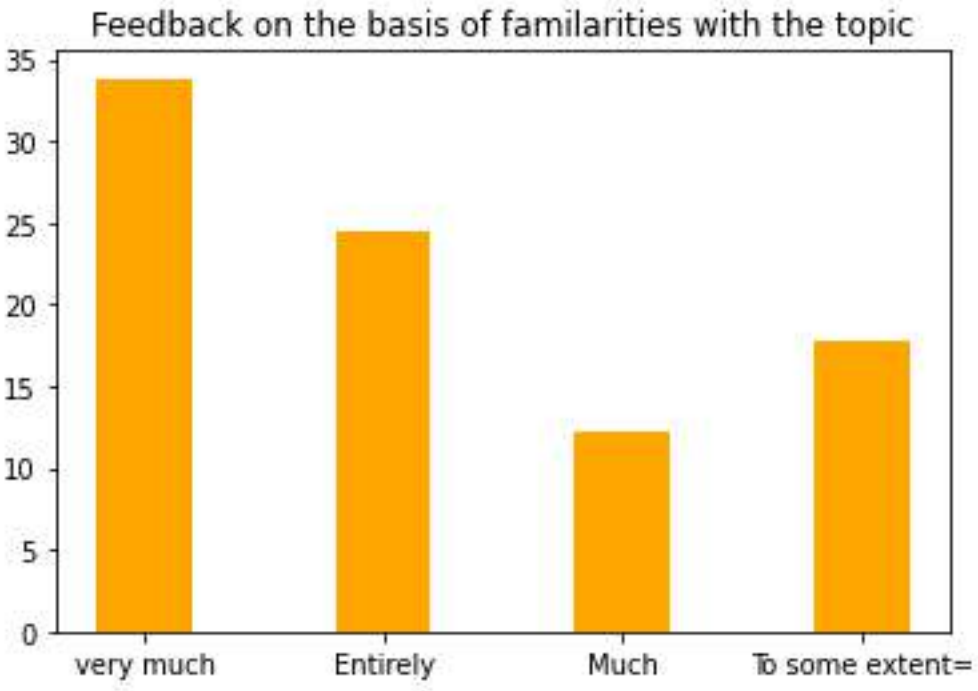


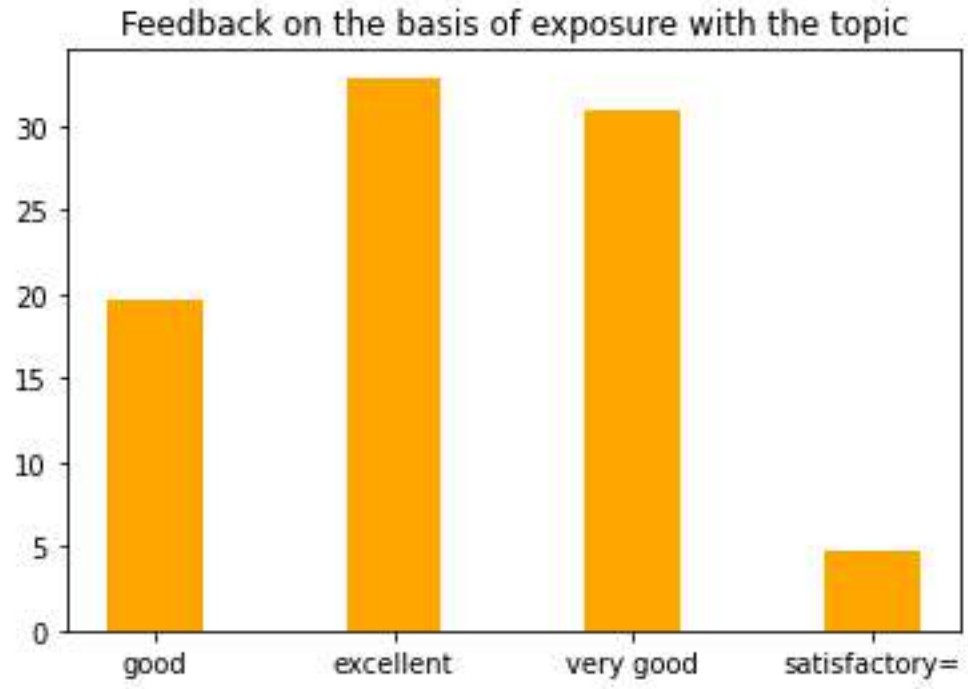
A brief proceeding/ overview: The arranged webinars were two days' online class lectures. In these two lectures Dr. Mukherjee introduced notions of integration from a viewpoint closely related to the geometry of the Euclidean space, such as the change of variables formula, line integrals, surface integrals, volume forms etc. Finally culminating in the n-dimensional analogue of the fundamental theorem of calculus, namely Stokes' theorem. Prof. Mukherjee discussed Stokes' theorem and differential forms in such an effortless manner, that every UG/PG student, research scholars and also faculties of different colleges/universities felt interested on the topic.

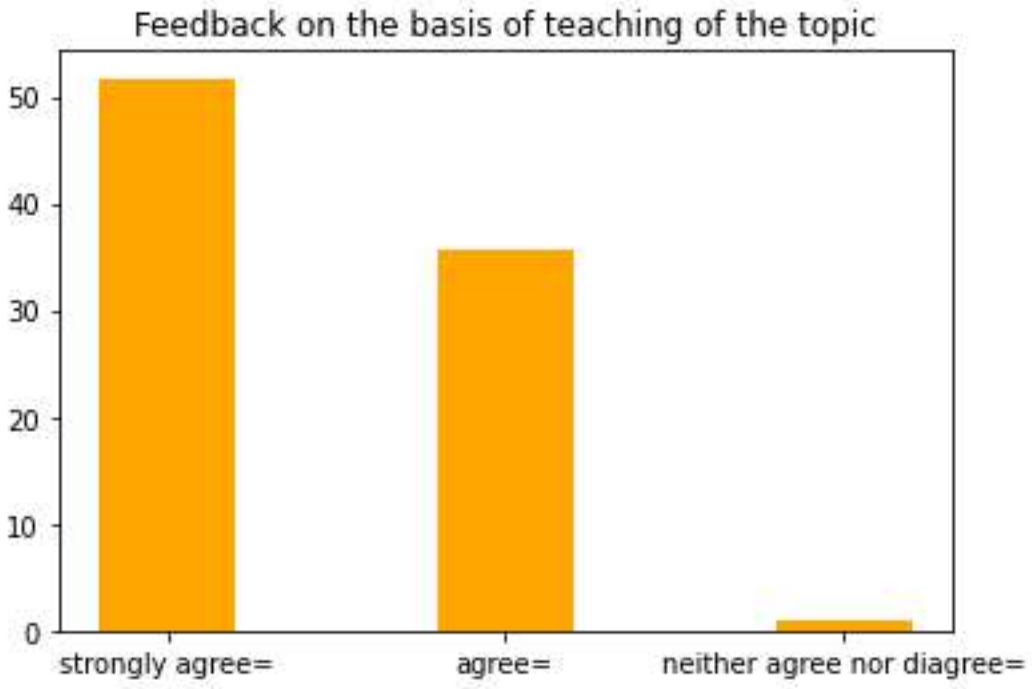
The webinars were commenced by the organizing Secretary Dr. Ushnish Sarkar, Assistant Professor of Mathematics, NSOU. After a brief introduction of the speaker Prof. Chiranjib Mukherjee by Dr. Sarkar, the welcome address was delivered by Chairperson Prof. Kajal De, Head of the Department of Mathematics & Director, School of Sciences, NSOU. Later Prof. Mukherjee took over the session. On day 1, the lecture was mainly focused on introducing and explaining several interesting notions including the underlying orientation in fundamental theorem of integral calculus, k- forms, wedge product and differential forms. In the 2nd day, Dr. Mukherjee mainly discussed the Stokes' theorem at length along with its application.

The programme ended with the concluding remarks of Prof. Kajal De and Dr. Ushnish Sarkar, followed by the vote of thanks by Mr. Chandan Kumar Mondal, Assistant Professor of Mathematics, who is also Organizing Secretary of this series. A special thanks was given to the Honourable Vice Chancellor, Prof. Subha Shankar Sarkar of Netaji Subhas Open University (NSOU) for his exemplary and inspirational leadership and support towards materializing this event into a reality.

Feedbacks at a glance







Remarks: The lectures were a huge success and received a positive response from the participants.