**Abstract**

Mathematical models of dynamic processes, under controlled environments, are modelled well by differential equations (deterministic, stochastic, and hybrid). In this conversational overview, we will present some basic tools and techniques and highlight their efficacy through examples from engineering, physical, and social sciences. Specifically, examples will be drawn from population dynamics, models of material degradation and failure, and cooperative and competitive dynamics in social networks.

**About the Speaker**

**Dr. Jagdish Chandra** received his doctorate in Mathematical Sciences from the Rensselaer Polytechnic Institute in 1965. He specializes in nonlinear analysis, intelligent systems, stochastic analysis, simulation and modeling and has over 80 refereed publications to his credit. He is a Senior Member of the IEEE, a Member of the American Mathematics Society and SIAM. Dr. Chandra was a Research Professor at The George Washington University from 1999 to 2013. Prior to that he was in the US Senior Executive Service serving as the Deputy Director in the US Army’s IS&T Directorate, and as The Director of the
Mathematical & Computer Sciences Division of The Army Research Office. The Mathematics Research Center at the University of Wisconsin at Madison was under his preview in his capacity as the Director of the Army Research Office. Dr. Chandra has been at the forefront of US research in the mathematical and engineering sciences with a bevy of cutting edge initiatives to his credit and a tireless passion for the mentoring of budding scientists some of whom have achieved distinction as Members of National Academies.

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*All are Welcome!*

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