

**COMPUTATIONAL MODELING OF  
BIOLOGICAL AND  
ENGINEERING SYSTEMS**

Under

Global Initiative of Academic Networks (GIAN)  
National Institute of Technology  
Puducherry  
Thiruvettakudy , Karaikal – 609 609, India

**REGISTRATION FORM**

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Biological and Engineering Systems” being  
organized by Department of Mathematics , NIT  
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Organization with seal

**Registration Fee**

Participants from Abroad : US \$600  
Industry/ Research Organizations : Rs. 6000/-  
Faculty Members / Researchers: Rs.2000/-  
Students (pursuing PhD/Masters/Bachelors courses): Rs  
1000/-  
No registration fee for participants from NIT Puducherry.  
\*\*The Registration Fee includes all instructional materials,  
computer use for tutorials, free internet facility.  
\*\*If any body need Accommodation and food for 10 days  
in Hostels then in addition to the registration fee pay  
Rs. 2000.00 extra  
To register or for any queries please send an email to  
[kaladhar@nitpy.ac.in](mailto:kaladhar@nitpy.ac.in) or [kkr.nitpy@gmail.com](mailto:kkr.nitpy@gmail.com)

**Mode of Payment : *Electronic Fund Transfer only***

The payment details with Registration form should  
be sent to the following address by **20<sup>th</sup> October, 2017**

<b>Bank Name</b>	<b>State Bank of India</b>
<b>Bank Address</b>	No : 72, Bharathiyar, Road, Karaikal –609602
<b>Account Name</b>	Scholarships& Deposits Ac- count
<b>Account No.</b>	32912184337
<b>IFSC code</b>	SBIN0001418

\*\*Register for the course online at  
<http://www.gian.iitkgp.ac.in/>

**Dr Kaladhar Kolla**

Host Faculty- GIAN course on COMPUTATIONAL MODEL-  
ING OF BIOLOGICAL AND ENGINEERING SYSTEMS,  
NIT PUDUCHERRY, Karaikal-609 609, India.

Phone: 07598198022

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**COMPUTATIONAL MODELING  
OF BIOLOGICAL AND  
ENGINEERING SYSTEMS**



Organized by  
Department of Mathematics  
National Institute of Technology Puducherry  
Karaikal-609 609  
India

October 30– November 8, 2017

**Venue**  
**Science Block, NIT Puducherry**

For more details visit: [www.nitpy.ac.in](http://www.nitpy.ac.in)

### GIAN – An overview

Global Initiative of Academic Networks (GIAN) is a new program in Higher Education approved by Govt. of India to involve the internationally acclaimed talent pool of scientists and entrepreneurs, to encourage their engagement with the institutes of Higher Education in India which will lead to augmentation of the country's existing academic resources, accelerate the pace of quality reform, and elevate India's scientific and technological capacity to global excellence.

This has a particular aim to garner the best international experience into our systems of education that will enable interaction of students and faculty with the best academic and industry experts from all over the world and also to share their experiences and expertise.

### About NIT Puducherry

National Institute of Technology Puducherry (NITPy) nestled in the scenes of Karaikal, a coastal town in the basin of river Kaveri. It was started by MHRD, Govt. of India in the year 2010. Notwithstanding the tender age, NITPy is committed to produce effective and responsible scientists and engineers who have the ability to serve the nation on its prosperous journey. Faculties and students are having experience in modern and up-to-date scientific developments. NITPy also enjoys the status "An Institute of National Importance" given by MHRD, Govt. of India, New Delhi.

The institute is situated in the city Karaikal which can be reached by Air through Chennai. Karaikal is the nearest railway station to NIT Puducherry. The journey (by road) from Puducherry to Karaikal may take approx. 4 Hrs.

### Overview of Course

In all sciences and engineering, models are used to represent, usually in an abbreviated form, a more complex and detailed reality. Models are used because in some way, they are more accessible, convenient, or familiar to practitioners than the subject of study. Models can serve as explanatory or pedagogical tools, represent more explicitly the state of knowledge, predict results, or act as the objects of further experiments. Computational models – simulations—represent the other end of the modeling spectrum. Simulation is often necessary to explore the implications of a model, especially its dynamical behavior, because human intuition about complex nonlinear systems is often inadequate. This course introduces the concepts of mathematical and computational modelling of biological and engineering systems.

### Course Plan

<b>Mod- ules</b>	<ol style="list-style-type: none"><li>1: First Order ODE-Computational models</li><li>2: Epidemiology–Computational models with dynamical systems</li><li>3: Ecology-Computational Model with dynamical systems</li><li>4: Optimal control computational models in epidemiology and ecology.</li><li>5: NanofluidDynamics</li><li>6: Entropy generation analysis in fluid flow</li><li>7: A co-infection model of diseases</li><li>8: Optimal Control of HIV/AIDS in the Workplace</li><li>9. Fluid-based computational models:</li><li>10. Hermite–Pade', Adomian-Padé and VIM-Padé approach</li></ol>
<b>Who can attend ...</b>	<p>Honours, MSc, PhD, Post Doc research students with interests in efficient ways of solving differential equations.</p> <p>Faculty members involved in teaching numerical methods of solution.</p>
<b>Contact Details</b>	<ol style="list-style-type: none"><li>1) <b>Local Coordinator</b> Name : Dr. B. Surendiran Contact : 9942761363 Email : surendiran@gmail.com</li><li>2) <b>Host Faculty</b> Name : Dr. Kaladhar Kolla Contact : 7598198022 Email : kaladhar@nitpy.ac.in, Kkr.nitpy@gmail.com</li><li>3) <b>Institute Address</b> National Institute of Technology Puducherry Karaikal—609 609, India Phone No.: +91-4368-265235 Tele-Fax No.: +91-4368-265230 Website: <a href="http://www.nitpy.ac.in">www.nitpy.ac.in</a></li></ol>

### The Faculty

**Professor Oluwole Daniel Makinde** is a Distinguished Professor of Applied Mathematics and Computations at the Faculty of Military Science, Stellenbosch University, South Africa. He is also a visiting Professor to the NM-AIST in Arusha-Tanzania; PAUISTI in Nairobi- Kenya and AUST in Abuja Nigeria. Prior to his present appointment he was a Senior Professor & Director of Postgraduate Studies and the founding Director of Institute for Advanced Research in Mathematical Modelling and Computations at Cape Peninsula University of Technology, South Africa (2008-2013); Full Professor and Head of Applied Mathematics department at University of Limpopo (former University of the North) South Africa (1998-2008). He is an NRF-rated researcher. Prof. Makinde authored four Applied Mathematics Textbooks & Monographs and published over 250 research papers in many reputable international journals worldwide. He has supervised and graduated over 25 PhDs, 80 MSc and 300 BSc (Hons) candidates in the field of Applied and Computations Mathematics across the African continent. Professor Makinde is a Fellow of African Academy of Sciences, Fellow of Papua New Guinea Mathematical Society, the Secretary General of African Mathematical Union, former Vice-President and General Secretary of Southern African Mathematical Sciences Association (2000-2004); Associate member of ICTP (2000- 2005), founding Academic advisory board member of AIMS in South Africa (2003-2005) and an associate member of National Institute of Theoretical Physics (NITheP) in South Africa.

[http://scholar.google.co.za/citations?user=00NF\\_EwAAAAJ&hl=en](http://scholar.google.co.za/citations?user=00NF_EwAAAAJ&hl=en)

**Dr. Kaladhar Kolla** is an Assistant Professor in the Department of Mathematics, National Institute of Technology Puducherry. His research areas of interest include Heat and Mass Transfer in Porous Media, Boundary Layer Flows, Polar fluids, Computational Methods. At present he has Research projects funded by UGC, CSIR.