

### Technical Workshops Series – 2020

Online lecture course on  
**Data Analysis Using MATLAB**  
 - Organized by Venture Center -

<b>Learn</b>	<ul style="list-style-type: none"> <li>Statistical and graphical methods for the analysis of data from experiments.</li> <li>Use of MATLAB to investigate data and illustrate concepts.</li> </ul>
<b>Organized by</b>	<ul style="list-style-type: none"> <li>Venture Center</li> </ul>
<b>Supported by</b>	<ul style="list-style-type: none"> <li>MathWorks Accelerator Program</li> <li>NIDHI Center of Excellence at Venture Center</li> </ul>
<b>For whom</b>	<ul style="list-style-type: none"> <li>Industry professionals</li> <li>Students, academics and researchers</li> </ul>
<b>When</b>	November 26-30   1800 – 1900 hrs
<b>Where</b>	Workshop will be conducted through an online platform. Registered participants will be sent invitations and links to join the workshop
<b>Contact</b>	<i>Technical queries:</i> Sayali   020-25865877   sayali@web.venturecenter.co.in
<b>Registration</b>	<p>Registration is mandatory   Limited seats!!!                      Cost: Rs 1,000 /-                      Registration Process:</p> <ul style="list-style-type: none"> <li>Step 1: Interested participants need to fill in registration form at the following link. Register online at : <a href="https://bit.ly/31smaBG">https://bit.ly/31smaBG</a></li> <li>Step 2: Email invites will be sent <b>post screening</b> of registration details.</li> <li>Step 3: Attendance only on confirmation of payment of registration fee.</li> </ul> <p>More details at: <a href="http://www.venturecenter.co.in/workshops/">http://www.venturecenter.co.in/workshops/</a></p>

#### Introduction

The lecture course focuses on statistical and graphical methods of practical utility, while working with experimental/numerical data. Statistical theory is discussed, not as an exercise in mathematics, but as a tool for experimental work. MATLAB software is used to illustrate concepts.

Familiarity with MATLAB is not a pre-requisite. However, beginners may work through the following tutorial: <https://in.mathworks.com/learn/tutorials/matlab-onramp.html>

#### Workshop Outline

- Graphical transformation of functions. Graphing of data.
- Power laws and dimensional analysis. Significant digits and round-off. Precision and Accuracy. Systematic and random errors.
- Population and sample statistics. Mean, median and mode. Standard deviation, skewness, kurtosis. Coefficient of variation. Standard error. Commonly occurring probability distributions.
- Central-limit theorem. Confidence intervals. Tolerance.
- Covariance, correlation coefficient. Propagation of uncertainty. Least-squares curve fitting. Goodness of fit.

### Workshop includes

- Lectures
- Q&A sessions
- Access to restricted website with online compilation of resources
- Certificate of participation issued by Venture Center

### Workshop Schedule

Time	Session	Lead
Day 1		
1800 – 1805 (5 Min)	Welcome and introduction Set the stage for Data Analysis lecture series	V. Premnath
1805 – 1810 (5 Min)	Addressing to participants by MathWorks team	Sanjay Gopinath
1810 – 1900 (50 Min)	Session 1	Chirag Kalelkar
1900 – 1905 (5 Min)	Q&A	
Day 2		
1805 – 1855 (50 Min)	Session 2	Chirag Kalelkar
1855 – 1900 (5 Min)	Q&A	
Day 3		
1805 – 1855 (50 Min)	Session 3	Chirag Kalelkar
1855 – 1900 (5 Min)	Q&A	
Day 4		
1805 – 1855 (50 Min)	Session 4	Chirag Kalelkar
1855 – 1900 (5 Min)	Q&A	
Day 5		
1805 – 1855 (50 Min)	Session 5	Chirag Kalelkar
1855 – 1905 (10 Min)	Q&A and Closure	V. Premnath Sanjay Gopinath

### Speakers and Organisers



Dr. Chirag Kalelkar is an Assistant Professor at the Indian Institute of Technology, Kharagpur. He did his Ph.D. in Physics from Indian Institute of Science, Bangalore in 2006. He worked as Faculty Research Associate at the University of Maryland (2006 -2008), Enhanced Post-doctoral Fellow at the National Chemical Laboratory (2008-2009), and visiting Post-doctoral Fellow at the Raman Research Institute (2010) and as Research Associate at the Massachusetts Institute of Technology (2011 -2012). Chirag works in the area of experimental fluid dynamics and soft condensed matter



Dr. Premnath V. is currently the Head- NCL Innovations, Head -Intellectual Property Group at NCL, Scientist-Polymer Science & Engineering Division at NCL and Director-Venture Center. He holds a B.Tech. from the IIT-B and a Ph.D. from the MIT, USA. He has also been a Chevening Technology Enterprise Fellow with the Centre for Scientific Enterprises, London Business School and Cambridge University, UK. He brings with him considerable experience in technology development and commercialization (two successfully commercialized families of biomedical products), incubation and innovation management, working with start-up companies (in Cambridge-UK and India) and engaging with large corporations on research and consulting projects as project leader.



Sayali Kothmire is Coordinator-Protoshop at Venture Center. She is B.E.(Instrumentation & Control Engineer) from University of Pune. She manages operations at Protoshop, provides training, plans & executes setting up & maintenance work in Protoshop also involved in creating, planning and organizing technical and scientific workshops & hands-on lab exercises with Tinkering lab instruments.

### About the organizers




Entrepreneurship Development Center (Venture Center) – a CSIR initiative – is a Section 60 company hosted by the National Chemical Laboratory, Pune. Venture Center strives to nucleate and nurture technology and knowledge-based enterprises by leveraging the scientific and engineering competencies of the institutions in the Pune region in India. The Venture Center is a technology business incubator supported by the Department of Science & Technology's National Science & Technology Entrepreneurship Development Board (DST-NSTEDB). Venture Center focuses on technology enterprises offering products and services exploiting scientific expertise in the areas of materials, chemicals and biological sciences & engineering.

For more information, visit <http://www.venturecenter.co.in/>




Protoshop combines Tinkering lab and Prayashala, which are the prototyping facilities at Venture Center. Protoshop is an initiative of Venture Center (a technology business incubator hosted by CSIR-NCL) with the generous support from in-house funds and the host Institution. It aims at providing services to the Inventors and Entrepreneurs to design and build their prototypes and bringing their ideas into life.

For more information about Protoshop: <http://www.protoshop.in/>

	<p>The National Science and Technology Entrepreneurship Development Board (NSTEDB), Department of Science and Technology, Government of India has awarded VentureCenter with the status of a NIDHCoE (National Initiative for Developing and Harnessing Innovations — Center of Excellence an umbrella programme conceived by DST). This award is accompanied by a grant of Rs. 50 Cr for 5 year duration to help Venture Center <del>expand</del> <sup>upscale</sup> activities and demonstrate greater success to accommodate more than 100 startups at any time and to upgrade and add new facilities for supporting science and technology based startups. NIDHCoE is catalyzed and supported by NSTEDB Division, Department of Science and Technology, New Delhi.</p> <p>For more information, visit: <a href="http://nidhicoe.venturecenter.co.in/">http://nidhicoe.venturecenter.co.in/</a></p>
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### Knowledge Partners

	<p>MathWorks is the leading developer of mathematical computing software. MATLAB, the language of engineers and scientists, is a programming environment for algorithm development, data analysis, visualization, and numeric computation. Simulink is a block diagram environment for simulation and Model-Based Design of multi-domain and embedded engineering systems. They can explore and implement designs without having to write C, C++, or HDL code. Engineers and scientists worldwide rely on these product families to accelerate the pace of discovery, innovation, and development in automotive, aerospace, electronics, renewable energy, financial services, biotech, and other industries. MathWorks supports over 3,000 startups and 235 Accelerators worldwide.</p> <p>For more information, visit: <a href="http://www.mathworks.com/startups">www.mathworks.com/startups</a></p>
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