

# Workshop on Network Simulation and Tools (NS3 and Omnet++)

Seamless Learning Opportunities

February 4-9, 2017

## ABOUT THE COURSE

A network simulator is a software that predicts the behavior of a computer network. Since, communication networks have become too complex for traditional analytical methods, so to provide an accurate understanding of system behavior, network simulators are used. In simulators, the computer network is typically modeled with devices, links, applications etc. and the performance is analyzed. A network simulator must enable a user to model the network topology specifying the nodes in the network, the links and traffic between those nodes providing network performance metrics as output.

The goal of this course is to provide knowledge on fundamental concepts of network simulators NS3 and Omnet++, generation of different network scenarios in these network simulators, understanding and implementation of existing as well as new modules and protocols of different networks like Wireless Sensor Network, Vehicular Ad-hoc Network, Internet of Things using frameworks like Veins, Castalia etc. in NS3 and Omnet++. Also, the course will cover the simulation environment of these simulators and performance analysis of the protocols.

## COURSE CONTENTS



**Introduction of NS3:** Installation and overview of the network simulator, GUI of NS3, commonly used APIs in NS3 and demonstration of existing examples in NS3.

**Simulation environment:** Basic models in NS3, communication technologies like WiFi, LTE etc., implementation of different protocols eg. routing protocols, data dissemination protocol etc. in different types of network (MANET, Sensor, VANET etc), setting of parameters like channels, transmission range, delay model etc. in simulator, integration with other frameworks, tools and libraries and handling of various attributes in NS3.

**Analysis:** Performance evaluation of the protocol on the different parameters like collision, delay, packet loss, no of packets generated etc.

**Introduction of Omnet++:** Installation, understanding of the simulator and demonstration of existing examples.

**Simulation environment:** Understanding and integration with other frameworks like Veins, Castalia, INET etc., implementation of different protocols in different networks using different frameworks, setting of simulation parameters and integration of hardware specific code.

**Analysis:** Result interpretation and analysis of the protocols on different parameters.

**Registration Fee :**

Rs. 2000/- for participants from academia (**course material + lunch inclusive**)  
**Accommodation charges (if needed) :** Rs. 2000/- (including breakfast and dinner)

## WHO CAN ATTEND

The programme is open to faculty and research scholars. Industry personnel working in the concerned/allied discipline may also apply.

**How to apply :**

**Online** – The participants may log on to the website [ict.iiitdmj.ac.in](http://ict.iiitdmj.ac.in) and fill up the application form by providing all the necessary details.

**By Email** – Scanned copy of the filled in application form duly endorsed by the forwarding authority may be mailed at : [vkjain@iiitdmj.ac.in](mailto:vkjain@iiitdmj.ac.in), [academyiiitdmj@gmail.com](mailto:academyiiitdmj@gmail.com).

Please also send/post your duly-filled application form endorsed by the forwarding authority along with the required DD of the registration fee (add accommodation charges, if needed) in favour of 'Electronics and ICT Academy, IIITDMJ' payable at Jabalpur to the contact address. Please ensure that your complete application should reach to us before due dates as mentioned below.

Note: No Travelling Allowance will be paid by the Academy.

**Last Date of Online Registration : January 25th, 2017**

Spot Registration also available if seats are available.

## RESOURCE PERSONS

**Dr. Vinod Kumar Jain**

Assistant Professor, PDPM IIITDM Jabalpur

**Dr. Matadeen Bansal**

Assistant Professor, PDPM IIITDM Jabalpur

**Mr. Rajendra D. Bhosle**

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Gita Deep Enterprises Kohlapur



सत्यमेव जयते

Supported by:

Department of Electronics and Information Technology (DeitY)  
Ministry of Communication and Information Technology,  
Government of India

## COURSE COORDINATORS

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