

Two Week (Online & Offline mode)
Faculty Development Programme (FDP)

On

**Data Analytics and Simulation for
Healthcare Supply Chain Management**

February 20th-March 03rd, 2023

Under the aegis of

**AICTE Training and Learning (ATAL)
Academy**



Sponsored by

AICTE, New Delhi



Organized by

**Department of Production Engineering
National Institute of Technology
Trichy, TamilNadu India**



ABOUT NIT TRICHY

The National Institute of Technology (formerly known as Regional Engineering College) Tiruchirappalli (NIT-T), situated in the heart of Tamil Nadu on the banks of river Cauvery, was started as a joint and co-operative venture of the Government of India and the Government of Tamil Nadu in 1964 to cater the needs of man-power in technology for the country. The college has been conferred autonomy in financial and administrative matters to achieve rapid development. Because of this rich experience, this institution was granted Deemed University Status with the approval of the UGC/AICTE and Govt. of India in 2003 and renamed as National Institute of Technology. NIT-Trichy was registered under the Societies Registration Act XXVII of 1975 and is one of the 31 National Institutes of Technology established by the Government of India.

The institution offers Under Graduate Courses in ten branches and Post Graduate Courses in twenty-six disciplines of Science, Engineering & Technology, besides M.S. (by Research) and PhD in all the departments. About 6200 students are enrolled in the Institute, and around 330 faculty members are employed in regular positions. NIT-T is ranked top among 31 NITs in India and presently occupies 8th position in the NIRF ranking. The Institute aims to benchmark with global universities in the top 200 in world rankings in terms of teaching, innovation and Research, funding and internationalization.

PRODUCTION ENGINEERING DEPARTMENT

The Department of Production Engineering is established in the year 1983. The Department offers B.Tech. (Production Engineering), M.Tech. (Manufacturing technology), M.Tech. (Industrial Engineering and Management), M.S. and PhD programmes. State-of-the-art laboratories are available in the areas of Simulation, Operations Management, Ergonomics, Machining, Forming, Welding, Robotics, CIM, CNC, Mechatronics, Tribology and composite materials. The Department offers engineering consultancy in design, manufacturing and resource management.

**ORGANIZING COMMITTEE
Chief Patron**



Dr.G. Aghila
Director, NIT-Trichy

Patron



Dr. C. Sathiyarayanan
Head of the Department

**Program Coordinator
(ATAL)**



Dr.S.PrasannaVenkatesan

Program Co-coordinator



Dr S. Vinodh

Course Overview: Hospitals are experiencing greater pressure to perform more effectively due to increasing medical possibilities, more demanding patients, government regulations, informed insurers, complex systems, peer industry competition, and new health threats. The healthcare delivery is, by its nature, stochastic. The environment and the operation of the healthcare system is unpredictable, and the system must be able to respond to changes. Within hospitals and clinics, service and response times can vary greatly, and clinical outcomes are usually uncertain. These characteristics suggest that modeling and computer simulation (M&S) is an ideal tool for healthcare system.

M&S is a form of prescriptive analytics where a model of a real or proposed system is implemented, scenarios for experimentation are then developed together with the stakeholders (clinicians and healthcare professionals), and the model executed using different random numbers (replications). The results of the model then help inform decision making. This course will inform the participants of the different stages of a simulation study (for example, conceptual modelling, model building, validation and verification, scenario development, output data analysis), three different simulation methodologies (Discrete-event Simulation, Agent-based Simulation and System Dynamics), multi-methodology hybrid modelling and simulation (combined application of DES, SBS and SD), and will include case studies and hands-on training on model development.

In addition to the quantitative aspects of a simulation study, we also focus on qualitative aspects that are involved in problem formulation, interaction with the stakeholders and conceptual modelling, all of which also contribute to the success of a simulation study. We will have a session focusing on the write-up of research for a simulation/Operations Research journal.

Objectives: The primary objectives of the course are to expose the participants

- ❖ To the strategic, tactical and operational issues in healthcare supply chain management
- ❖ To the application of prescriptive analytics tool and simulation approaches to model real or proposed systems of interest
- ❖ To analyze and understand patient-centric health services and healthcare supply chain
- ❖ To provide demonstrations and hands on training on healthcare simulation through case studies
- ❖ To engage in simulation-related research and how studies could be written-up for healthcare journals.

Theory and Lab sessions:

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|-------------|--------|---|--|
| Sessions | Theory | 01 | Modeling issues in Healthcare supply chain management |
| | | 02 | The life cycle of a simulation study |
| | | 03 | Patient centric health services in hospital using simulation |
| | | 04 | Application of DES for planning of Outpatient Departments |
| | | 05 | Case studies on healthcare supply chain management |
| | | 06 | Hybrid modelling and simulation |
| | | 07 | Data analytics for healthcare |
| | | 08 | Science mapping tools in Healthcare management |
| | | 09 | Bibliometric analysis and Research writing in Healthcare |
| Lab & visit | 10 | Open source tools for simulation & Hands on training in simulation with Simquick, Flexsim, Witness, Arena etc., | |
| | 11 | | |
| | 12 | | |
| | 13 | | |
| | 14 | Visit to nearby facilities | |

Resource persons: Eminent people from IITs, IIMs, NITs, and Simulation Industry

Targeted participants: This two-week (online and offline) faculty development programme is exclusively designed for

- Faculty member working in Engineering Colleges in Production, Industrial Engineering, Mechanical, Management and allied Departments.
- Health and social care managers, practitioners, clinicians, information analysts and service users within the health and care system, R&D Organizations/Consultancy firms
- Students (MTech./MSc.) interested in healthcare management & Research Scholars pursuing research in healthcare simulation

Registration Details:

The course will be conducted online (*first week-theory*) and offline (*second week-training/lab*) as per the ATAL FDP Guidelines, and there is **NO REGISTRATION FEE** required for participation. Number of Participant registrations is limited to **maximum of 50**. Confirmation of participation will be strictly on the **FIRST COME FIRST SERVE BASIS**. Continuous assessment of attendees.

To ensure participation the online Registration should be made in advance on the ATAL Academy.

website:

<https://atalacademy.aicte-india.org>

Details for Correspondence:

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