



Ministry of Human Resource Development
GOVERNMENT OF INDIA



Global Initiative of
Academic Networks
(GIAN)



Program on

ADVANCES IN RELIABILITY ENGINEERING

July 31 – August 4, 2018

by

International Faculty

Dr OM PRAKASH YADAV

Professor and Chair

Industrial and Manufacturing Engineering Department
North Dakota State University, Fargo, USA

Course Coordinators

Dr ANISH SACHDEVA

Associate Professor, Deptt of Industrial and Production Engineering

Dr R K GARG

Professor, Deptt of Industrial and Production Engineering



Organized by

DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING

Dr B R Ambedkar National Institute of Technology

Jalandhar 144 011, Punjab, INDIA

Institute Website: www.nitj.ac.in

ABOUT THE GIAN COURSES

The Ministry of Human Resource Development (MHRD), Government of India has launched an innovative program titled “Global Initiative of Academic Networks (GIAN)” in higher education, in order to garner the best international expertise into our system. As a part of this, internationally renowned academicians and scientists are invited to augment the country's academic resources, accelerate the pace of quality reforms and elevate India's scientific and technological capacity to global excellence. More details on GIAN courses can be seen at <http://www.gian.iitkgp.ac.in/>.

OVERVIEW OF THE PROGRAM

Reliability engineering field is getting significantly important with increasing product complexities and customer awareness. Moreover, the increasing global competition and reduced product development lead time have forced manufacturers to streamline their product development processes. The traditional reliability engineering approaches of modelling warranty or field failure data to assess reliability of future products are no longer helpful to improve product reliability and reduce product development time. If someone estimates reliability solely based on failure data, then inference drawn based on this estimate will usually be biased. Because of these challenges, there is growing interest and focus among reliability engineering professionals to devise new tools and approaches that can help not only to improve product reliability during product design stage but also facilitate rationale decision making for warranty design, maintenance planning, and spare parts inventory management. Especially real time condition monitoring with remaining useful life prediction has got significant attention because it helps making quick decisions while considering current states of the product or systems. Therefore, degradation modelling and physics-of-failure based models are being studied rigorously for reliability prediction and design improvement. The advances in sensor technology and other methods of real-time data collection have played a significant role in changing to role of reliability engineering in product design and system safety. The focus of this course is to introduce participants with these advances and motivate for increasing their research interest in these areas.

OBJECTIVES

- To address cyber-laboratories of Modeling and Innovation. Introduce fundamental principles of probabilistic methods and reliability approaches.
- Demonstrate the importance of reliability tools and methods in improving product quality and reduce product lead time.
- Highlight advances in reliability engineering and show potential this domain hold for providing significant help not only to design community but to society as well.
- Show importance of collaborative efforts between design, manufacturing, and reliability professionals for providing better product to customers.

TEACHING FACULTY



Om Prakash Yadav

Professor and Chair,
Industrial and Manufacturing Engineering
Department
Director, Centre for Quality, Reliability, and
Maintainability Engineering (CQRME)
College of Engineering, North Dakota State
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Professor Om Prakash Yadav received his B.E. (Mechanical Engineering) from Malviya National Institute of Technology, Jaipur in 1986; M.Sc. (Industrial Engineering) from National Institute of Industrial Engineering, Bombay in 1992; and Ph.D. (Industrial and Manufacturing Engineering) from Wayne State University, Detroit (USA) in 2002. He has always been interested in developing a strong link between industry and academia to provide better education to students and conduct research that can help industries. The establishment of CQRME is an evidence of his continued efforts and hard work to realize that dream and make an impact on both student learning as well as industries. His research interests mainly include reliability modelling, robust design, data analytics, supply chain modelling, and manufacturing system analysis. His current research projects are focused on degradation modelling and reliability analysis, remaining useful life prediction, prognostic health management, and designing logistic support based on degradation or condition monitoring.

COURSE CONTENTS

- Principles of Reliability engineering, Probability distributions.
- Estimation techniques, Distribution Fitting.
- Accelerated Testing, Reliability Assessment of Systems, Petri nets for Reliability Modelling
- Analysis of Failure with censored data, Physical reliability models.
- Maintenance planning and strategies, Degradation modelling, useful life prediction

HOW TO REGISTER

Stage – 1: One time Web (Portal) Registration: Visit GIAN Website at the link: <http://www.gian.iitkgp.ac.in/GREGN/index> and create login User ID and Password. Fill up the blank registration form and do web registration by paying Rs. 500/- online through Net Banking/Debit/Credit card. This provides him/her with life time registration to enroll in any number of the GIAN courses offered.

Stage – 2: Course Registration (Through GIAN Portal): Log in to the GIAN portal with the user ID and Password created. Click on “Course Registration” option given at the top of the registration form. Select the Course titled “**ADVANCES IN RELIABILITY ENGINEERING**” from the list and click on “Save” option. Confirm your registration by Clicking on “Confirm Course”.

REGISTRATION FEES

- Participants from abroad: US \$200
- Industry/ Research Organizations: Rs. 4,000/-
- Academic Institutions: Rs. 2,500/-
- Students: Rs. 1,000/-

The above fee includes all instructional materials, internet facility and refreshments. Boarding and lodging will be provided on payment basis subject to availability.

PATRON

Professor Lalit Kumar Awasthi

Director

Dr. B. R. Ambedkar National Institute of Technology Jalandhar, India

COORDINATORS

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Local GIAN Coordinator

Dr S. Bajpai,

Associate Professor

Department of chemical Engineering

Dr B R Ambedkar National Institute of Technology Jalandhar, India -144011

Email: bajpais@nitj.ac.in

PAYMENT OF FEES

DD in favour of “**GIAN: RELIABILITY ENGINEERING**” payable at Jalandhar

or

Bank Transfer - Account Number: 2945101003463

Canara Bank, NIT Jalandhar (Branch Code: 2945)

IFSC Code: CNRB0002945

MICR Code: 144015011

Application Form along with requisite fees should be sent to Dr Anish Sachdeva, Course Coordinator

ABOUT NIT JALANDHAR

Dr B R Ambedkar National Institute of Technology was established in the year 1987 as Regional Engineering College and was given the status of National Institute of Technology (Deemed University) by the Government of India on October 17, 2002 under the aegis of Ministry of Human Resource Development, New Delhi. The Government of India has declared the Institute as an "Institute of National Importance" under an act of Parliament in 2007. A large number of reputed industrial houses in the country visit the Institute and select the final year students as Engineers/ Management Trainees. As one of the National Institutes of Technology (NIT), the Institute has the responsibility of providing high quality education in Engineering, Technology and Sciences to produce competent technical and scientific manpower for the country. The Institute offers B Tech, M Tech, M Sc, MBA and PhD programmes in several disciplines of Engineering, Technology and Sciences.

How to reach us: The Institute is located on the G.T. Road Amritsar by-pass at a distance of 15 km from the Jalandhar Bus Stand, 12 km from Jalandhar City Railway Station, and 18 km from Jalandhar Cantt Railway Station.

Campus: The Institute campus is spread over an area of 154 acres. It has many topographical features, various buildings of different nature with clean and wide roads surrounded by a green belt. The campus area has been broadly divided into different functional zones: (i) Institution zone for teaching departments/ centers/administration (ii) residential zone for the faculty and staff (iii) students' hostel zone.

ABOUT THE DEPARTMENT OF INDUSTRIAL & PRODUCTION ENGG.

The Department of Industrial & Production Engineering, Dr. B R Ambedkar NIT Jalandhar has been offering B. Tech in Industrial Engineering since 1989, B. Tech in Industrial and Production Engineering with effect from the batch admitted in 2008, Post-graduate Programme in Industrial Engineering and Manufacturing Technology from year 2001 and 2006 respectively, and Ph. D programme. The research areas of the IPE department are Supply Chain Management, Reliability and Maintenance, Ergonomics, Simulation and Modelling, Quality Management, Energy Management, Renewable Energy, Fracture Mechanics, Non-Traditional Machining, Tools and Metal Cutting, CAD/CAM, Industrial Automation & Robotics.

WHO CAN ATTEND

- Executives, Engineers and Researchers from industry, services, government organizations, research organizations
- Students (B Tech / M Tech and PhD) of Mechanical, Production & Industrial Engineering, Computer Engineering and related branches
- Faculty of related branches from academic Institutions.

REGISTRATION FORM



COURSE ON

ADVANCES IN RELIABILITY ENGINEERING (July 31 – August 4, 2018)

Dr B R Ambedkar National Institute of Technology Jalandhar 144 011, Punjab.

Name: Mr./Ms/Dr. _____
(In capital letters)

Designation: _____

Department: _____

Organization: _____

Address for Correspondence: _____

E-mail ID: _____

Field of Specialization: _____

Experience: _____ (in years)

Details of fees _____ Cash/DD/NEFT

Signature _____ Date _____

RECOMMENDATION OF THE SPONSORING AUTHORITY:

The applicant is hereby sponsored and will be permitted to attend the GIAN Program, if selected.

Date: _____

Signature and Seal of Sponsoring Authority