

A GIAN course

on

# Tissue Engineering & Regenerative Medicine

Dec 17-21, 2018

## REGISTRATION FORM

1. Name (in block letters): \_\_\_\_\_

2. Gender ☒ Male ☐ Female

3. Category: Academic/Industry/Student [For registration as students, please enclose a bonafied certificate from parent institution]

4. Address: \_\_\_\_\_

5. Tel No: \_\_\_\_\_

6. Email ID: \_\_\_\_\_

7. Highest Academic qualification: \_\_\_\_\_

8. NEFT Transaction Number: \_\_\_\_\_

9. Bank Name: \_\_\_\_\_

Date: \_\_\_\_\_ Amount: \_\_\_\_\_

Date: \_\_\_\_\_ Signature



Course on

## Tissue Engineering and Regenerative Medicine

Dec. 17-21, 2018

Foreign Faculty

**Dr. AKHILESH GAHARWAR**

*Department of Biomedical Engineering  
Texas A&M University USA*

Course Coordinator

**Dr. A. M. KUTHE**

**Professor**  
*Mechanical Engineering Department*

GIAN Coordinator (VNIT)

**Dr. K. M. BHURCHANDI**

**Professor & Head**  
*Electronics & Communication Department*

PATRON

**Dr. P. M. PADOLE**

**Director**  
*Visvesvaraya National Institute of Technology Nagpur*

**CAD-CAM CENTRE**

**Mechanical Engineering Department**

**Visvesvaraya National Institute of Technology (VNIT)**  
Nagpur-440010 India



CAD-CAM Centre



Tissue engineering Lab



CAD-CAM Centre is centre for innovation in Department of Mechanical Engineering, VNIT Nagpur. CAD-CAM centre provides a great platform for young engineers and researchers to work under completely equipped research laboratory. CAD-CAM centre equipped with latest machines including WEDM, ECM, CNC-VMC, Rapid Prototyping machine (FDM and uPrint), Agitation Tank, CNC-CMM, Induction furnace to name a few for Engineers, Doctors and Scientists to work under one roof. Two externally funded projects titled BETic & SMART FOUNDRY runs under this centre.

Tissue Engineering lab at VNIT CAD-CAM Centre is well equipped with the tissue culture facilities. 3D-Bioplotter, laminar cell culture hood, Liquid Nitrogen for long term storage of cell line. The Advanced version of Inverted Microscope and cell counter were used to carry out cell culture work. This is one of the productive lab in VNIT. Various tissue engineering work including development of bone scaffold is conducted here.

VNIT, Nagpur is one of the thirty National Institutes of Technology in the country. The Govt. of India by the act of Parliament (National Institutes of Technology Act, 2007) declared VNIT Nagpur as an Institute of National Importance along with other NITs. The VNIT located at Nagpur, which is known as 'Orange City', is connected to almost all part of the country by trains and flights. You can reach the institute from both railway station as well as the airport by taxi or auto-rickshaw in minimum time.





# Tissue Engineering & Regenerative Medicine

## SCOPE

Tissue engineering is newly emerging field focused on the construction of biological substitutes containing viable and functioning cells for the restoration, maintenance or improvement of tissue function. Tissue engineering incorporates body to use its own systems, sometimes with help foreign biological material to recreate cells and rebuild tissues and organs, hopes to focus on cures instead of treatments for complex, often chronic, diseases. With the increase in understanding of the extracellular microenvironment (ECM) and its role in developmental biology, the approaches to material synthesis and scaffold design are continuously evolving. The success of many constructs is often limited by the lack of biological complexity generated, leading to researchers investigating new methods to emulate native tissue environments. To translate our fundamental understanding of nature into products that are useful in a clinical setting, the chemical, physical, and biological properties of newly developed biomaterials need to be optimized to support, regulate, and influence long-term cellular activities. Both bottom-up and top-down approaches are considered by materials scientists to design biomimetic components for tissue engineering.

The course will cover the fundamental basics and application of engineering principles, combined with molecular cell biology, to develop fundamental understanding of property-function relationships in tissues repair and regeneration. Exploitation of this understanding to manipulate cell and tissue properties rationally to alter, restore, maintain, or improve cell and tissue functions as well as to design bio artificial tissue substitutes.

## COURSE OBJECTIVES

- To provide an overview of fundamental concepts in tissue engineering and regenerative medicine.
- To expose the participant to broad understanding of medical problems requiring the regeneration of tissue, and the methods for the fabrication of tissue-engineered products.
- To highlight the important role of biomaterials, cells and growth factors in regenerative engineering.
- To introduce newly emerging concept in regenerative engineering.
- To describe future prospect of tissue engineering.

## WHO CAN ATTEND

- ✓ Executives, engineers and researchers from manufacturing, service and government organizations including R&D laboratories.
- ✓ Student at all levels (BTech/MSc/MTech/PhD).
- ✓ Faculty members from reputed academic institutions and technical institutions.

## COURSE OUTLINE & DETAILS

Day 1	Day 2	Day 3	Day 4	Day 5
Tissue Engineering Basic	Biomaterials Synthesis/ Fabrication	Cell- Biomaterials Interactions	Bioplotter Demonstration	Organ printing

## ABOUT THE SPEAKERS



**Dr. Akhilesh K. Gaharwar is faculty member in the Department of Biomedical Engineering at Texas A&M University.** His research interest includes tissue engineering, nanomaterials, cell-nanomaterials interactions, stem cell biology, and additive manufacturing. Dr. Gaharwar has published 80+ high-impact journal articles including *PNAS*, *Advanced Materials*, *ACS Nano*, *Biomaterials*, *Nanoscale*, *Biomacromolecules*, *Acta Biomaterialia*, and *Advanced Functional Materials*. He has two-issued/pending patents, edited 2 books on nanomaterials for regenerative medicine and 6 book chapters. He has been cited 3700+ times and has H-index of 33. He is editorial board member of *"Regenerative Biomaterials"*, and *Bioprinting* (Elsevier). Over 15 major international awards have recognized Dr. Gaharwar's interdisciplinary research including "2018 Dean of Engineering Excellence Award", "2018 CMBE Rising Star Award", "2018 Langmuir Early Career Award", and "2017 NIH Director's New Innovator Award (DP2)" by National Institute of Health, "2015 BMES-CMBE Young innovator". His research work has also been recognized by "Materials Research Society (MRS)", "Biomedical Engineering Society (BMES)", and "Society For Biomaterials (SFB)". He also received "2015 Outstanding Faculty Award by Texas A&M BMES Student Chapter" for his mentoring undergraduate and graduate students. Dr. Gaharwar completed his postdoctoral training with Prof. Robert Langer (Massachusetts Institute of Technology, Cambridge, USA) and Prof. Ali Khademhosseini (Harvard University, Cambridge, USA). He received his PhD in Biomedical Engineering from Purdue University (West Lafayette, USA).



**Dr. A.M. Kuthe is currently Professor in Mechanical Eng. department and Prof-in-charge of CAD-CAM centre at Visvesvaraya National Institute of Technology (VNIT) Nagpur** which is an institute of national importance by the act of parliament. Prof. A.M.Kuthe began his career in 1986 after B.E. (Mechanical) from Govt. College of engineering Amravati by joining Hindustan aeronautics Limited Nashik. He obtained his M.Tech from IIT Roorkee and joined Birla consultancy Services (BICS) as senior software engineer. He left BICS and joined as regular faculty in VNIT in 1993 His research work mainly focused in the area of Rapid Prototyping (RP). The capabilities of RP equipment were extensively exploited by him to make custom build human body parts that were implanted in human bodies as well as to develop zero defect pattern making and casting. He has earned patent for the niche work undertaken by him. His contribution to international and national journals, presentation of papers at international conferences and authoring of a book demonstrate his deep study as well as authority on the subject. Creation of a well-equipped CAD-CAM centre at VNIT speaks volumes of his passion for raising the bar of academic standards. His self-motivation for introduction of industry oriented courses, as well as untiring efforts in creating awareness and building capacity for large scale adoption of Rapid Prototyping using CAD is a testimony of his passion. The all-encompassing contribution of prof. A.M.Kuthe in the area of RP expands the conventional boundaries of research

## REGISTRATION FEES

Participants From Abroad	US \$ 400
Industry/Research Organizations	Rs.10,000/-
Students	Rs.3,200/-
Students (SC/ST)	Rs.1,600/-
Non Students	Rs.6,400/-

The above fees include all instructional materials, computer use for tutorials, free internet facility, tea, snacks and lunch. It is inclusive of 18% GST as per institute norm. The participants may avail single bedded shared accommodation and food (breakfast and dinner) if requested on additional payment basis.

**Last date for Registration: 07/12/2018**

## HOW TO APPLY

Interested persons may apply in the format given herewith along with the registration fee paid through a demand draft in favour of 'Director, VNIT Nagpur' and payable at Nagpur or through NEFT transfer. The number of seats is limited and thus candidates are advised to register early.

For Electronic Payment (NEFT)  
Name of the Beneficiary: Director VNIT  
A/c No. 10259420288  
Name of Bank: State Bank of India  
Branch Name: VR CE Branch, Nagpur  
MICR Code: 440002005  
IFSC Code: SBIN0006702

**Note: For NEFT transfers all the transaction details are to be sent.**

For confirmation of registration, the proof of payment (a scanned copy of the Demand Draft/NEFT transaction details) along with the registration form and copy of PDF generated at GIAN portal (if registered through GIAN portal) are to be mailed to amkme2002@yahoo.com

## CONTACT

**Dr. A M KUTHE**  
Professor  
Mechanical Engineering Department  
VNIT Nagpur - 440010  
Email: amkme2002@yahoo.com  
Phone: +91-712-2801441 (off)  
+91-9423685194 (mob)