

COURSE BROCHURE

GLOBAL INITIATIVE FOR ACADEMIC NETWORKS



International Summer Term Course – 2016
on
Medical Textiles and Tissue Engineering
(July 20- 30, 2016)

Course Coordinators
Dr Vinay Midha and Dr Monica Sikka



Department of Textile Technology
Dr B R Ambedkar National Institute of Technology
Jalandhar – 144 011 (Punjab) India

About GIAN

Union Cabinet has approved a program titled **Global Initiative for Academic Networks (GIAN)** in Higher Education, aimed at tapping the talent pool of scientists and entrepreneurs Internationally to encourage their engagement with the Institutes of higher education in India, so as to augment the country's existing academic resources, accelerate the pace of quality reforms, and elevate India's scientific and technological capacity to global excellence. GIAN is envisaged to catalyze higher education Institutions in the country, and that will initially include all IITs, IIMs, central universities, IISc Bangalore, IISERs, NITs and IIITs. Subsequently, good state universities where the spinoff is vast, shall also be covered. GIAN is an evolving scheme which will initially include participation of foreign faculty in Institutes as Distinguished / Adjunct / Visiting faculty / Professors of practice. They will be delivering their expertise in short or semester-long courses. In addition, other activities shall also be included in due course of time.

GIAN is envisaged to achieve the following objectives:

1. To increase the footfalls of reputed International faculty in the Indian academic Institutes.
2. To provide opportunity to our faculty to learn, share knowledge and teaching skills in cutting edge areas.
3. To provide opportunity to our students to seek knowledge and experience from reputed International faculty.
4. To create avenues for possible collaborative research with the International faculty
5. To increase participation and presence of International students in the academic Institutes.
6. To provide opportunity for the students of different Institutes/Universities to interact and learn subjects in niche areas through collaborative learning process.
7. To provide opportunity for the technical persons from Indian Industry to improve their understanding and update their knowledge in relevant areas.
8. To motivate the best International experts in the world to work on problems related to India.
9. To develop high quality course material in niche areas, both through video and print media that can be used by a larger body of students and teachers.
10. To document and develop new pedagogic methods in emerging topics of National and International interest.

The Institute

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 Ministry of Human Resource Development, GOI has declared the Institute as '**Institute of National Importance**' under the act of Parliament-2007. A large number of reputed Industrial houses in the country visit the Institute and select the final year students as Engineers/ Management Trainees and the Scientists. .As one of the NITs, the Institute has the responsibility of providing high quality education in Engineering, Technology and Sciences to produce competent Technical and Scientific manpower. The Institute offers BTech, MTech, MSc, MBA and PhD programs in several disciplines of Engineering, Science & Technology, and Management.

Vision

To build a rich intellectual potential embedded with interdisciplinary knowledge, human values and professional ethics among the youth, aspirant of becoming Engineers and Technologists, so that they contribute to society and create a niche for a successful career.

Mission

To become a leading and unique Institution of higher learning, offering State-of-the-Art Education, Research and Training in Engineering and Technology to students who are able and eager to become change agents for the industrial and economic progress of the Nation. To nurture and sustain an academic ambience conducive to the development and growth of committed professionals for sustainable development of the Nation and to accomplish its integration into the global economy.

Quality Policy

- To develop technical human resource of excellence suitable for global requirements.
- To ensure good quality academic and industrial research program in different areas of Engineering and Technology.
- To generate Industry-Institute synergy for shaping technical education to meet the requirement of industry.

The Department

The department is pioneer in grooming textile engineers in this part of the country. Among 31 NITs of the country, it is the only NIT which runs textile technology courses and provides trained manpower to the textile industry. The department offers broad based undergraduate programme, B.Tech (Textile Technology), post graduate programme M.Tech (Textile Engineering and Management) and PhD programmes in all areas of textile technology.

The department has wide gamut of interdisciplinary research activities encompassing technical textiles, nonwoven fabrics, Bandage fabric for treatment of Edema, antimicrobial fabrics, surgical gowns, aerosol filtration, coir geomesh for soil erosion control, nano-composite filament, specialty yarn for enhanced comfort, sewing threads, fabric and sewing thread interaction, chemical processing of garments. The department has seven well equipped laboratories with modern research facilities providing technical support to the nearby industry, which are continuously being upgraded under TEQIP-II, DST-FIST and DST-instrumentation projects. In addition, several laboratories under other engineering departments and science disciplines are available for carrying out intra as well as inter-departmental research activities.

Recently the department has successfully completed GOI sponsored projects on designing nonwoven fabric for pulse jet filtration, needle punched blankets, optimization of production process of PP/carbon nano-fiber composite filament.

About the Program

Medical Textiles are the type of technical textiles which offer a variety of technical & functional properties having application in the field of medical and clinical care. The increased awareness of the need to enhance the quality of life of the people has contributed towards high consumption and sustained growth of medical textiles. Clear understanding is critically needed about the structure-property relationship of novel textile products, so that precise simulation of mechanical parameters for specific clinical applications can be achieved. The medical textile industries have diversified with new materials and innovative designs. Recently the application of textiles has started going beyond the usual wound care, incontinence pads, plasters etc., Latest innovations with the wide variety of woven, non woven, knitted forms of textile are increasingly finding their way into a variety of surgical procedures. As the

healthcare industry is growing enormously in India, the demand for the Medical Textile is also on the rise.

Tissue engineering is emerging as a significant potential alternative or complementary solution, whereby tissue and organ failure is addressed by implanting natural, synthetic, or semi synthetic tissue and organ mimics that are fully functional from the start, or that grow into the required functionality. Notable results include tissue-engineered bone, blood vessels, liver, muscle, and even nerve conduits. As a result of the medical and market potential, there is significant academic and corporate interest in this technology. Tissue engineering is the field that applies the principles of biology and engineering to the development of functional substitutes for damaged tissue. Development of efficient manufacturing processes for preparing novel polymeric biomaterials, fibrous scaffolds; detailed understanding of behaviour of human cells with respect to architectural and chemical signals offered by textile and/or polymer-based materials is the need of the hour. This course actually would target towards achieving this goal.

Objectives of the Program

The primary objectives of the program are:

1. Emphasize the role of medical textiles in enhancing quality of human life
2. Demonstrate the significance of textile products in healthcare and hygiene
3. Provide exposure to the participants regarding use of various medical devices through case studies and clinical trials
4. Awareness regarding tissue engineering, along with its scientific and social challenges.

Coverage

- Introduction to Medical Textiles
- Fibres/Speciality fibres & fabrics used in Medical Textiles
- Wound Dressings, Bandage Materials
- Infection Control and Barrier Materials
- Tissue Engineering, Scaffolds, Vascular grafts etc.
- Specific case studies in designing Medical Textiles/Devices
- Testing and Characterisation of Medical Devices
- Clinical Trials
- Marketing Aspects of Medical Textiles

Fee Details

The participation fee for taking the course would be:

Academicians	:	Rs. 3000/-
Students	:	Rs. 2000/-
Industry/Research	:	Rs. 3500/-
Participants from abroad	:	US \$200/-

The above fee includes the instructional materials, internet facility and snacks between the sessions. The accommodation will be provided on payment basis subject to availability on request otherwise participants will have to make their own stay arrangement.

Eligibility

Medical textiles and tissue engineering is an interdisciplinary research area, so the course would be beneficial for both the technologist and the biologist. It would help to gain knowledge relating to various aspects of the most dynamic research area in textiles for:

- Textile & Polymer Technologists
- Material Scientists
- Biotechnologist, Biochemists
- Students or faculty from academic institutions
- Industry/Research organization

Reaching NITJ

It is located on G.T. Road, Amritsar Bypass, 12 km from Jalandhar bus stand, 11 km from Jalandhar city railway station and 16 km from Jalandhar cantt. Railway station. Nearest airport Raja Sansi International Airport, Amritsar is 70 km away. The other nearby Airports are at Chandigarh – 150 km and Indira Gandhi International Airport, New Delhi – 390 km. Shatabdi Express train from New Delhi offers comfortable and easy connectivity to Jalandhar. The Shatabdi Express trains plying from New Delhi in the morning at 07.20 hrs and in the evening at 16.30 hrs and takes about 5 hours to reach Jalandhar City. Other Express and Superfast trains are also available besides AC buses round the clock. Jalandhar city is surrounded by famous Sutlej and Beas rivers, and is famous for leather goods, sports goods and hand tool industry. India's largest textile industry is 70 km away located at Ludhiana.

Registration Process

Step 1: One Time Registration

Registration for GIAN courses is not free because of constraint in the maximum number of participants allowed to register for a course. In order to register for any course under GIAN, candidate will have to get registered at the GIAN Portal of IIT Kharagpur using the following steps:

1. Create login and password at <http://www.gian.iitkgp.ac.in/GREGN/index>
2. Login and complete the Registration Form.
3. Select course to be attended
4. Confirm your application and payment information.
5. Pay **Rs. 500/- (non-refundable)** through online payment gateway.
6. **Download and print “pdf file”** of your enrolment application form for your personal records and copy of the same to be sent to the course coordinator.

Step 2: Institute Registration

1. Institute registration process is an **offline process**. Interested candidates are requested to download the Registration Form ([docx/pdf](#))
2. Course Fee (Non-refundable):

Students/Research Scholars:	Rs. 2000/-
Faculty/Staff of Academic Institutions:	Rs. 3000/-
Industry/Research Personnel:	Rs. 3500/-
Participants from abroad:	US \$200/-
3. The Registration fee has to be paid via Demand Draft/ NEFT“GIAN: Medical Textiles and Tissue Engineering” payable at Jalandhar. Payment can also be done through National Electronic Funds Transfer (NEFT) to the account of “GIAN: Medical Textiles and Tissue Engineering” (Account No.- 65249527611; State Bank of Patiala, IFSC Code: STBP0000841)
4. Scan copy of the filled in “Registration Form” along with scan copy of “Demand Draft/ receipt of NEFT” and Application form generated in Step 1 must be sent via email to the course coordinator, midhav@nitj.ac.in, on or before July 05, 2016.
5. Hard copy of the above mentioned documents must reach to the course coordinator on or before July 12, 2016.

How to Apply

1. Registration form should accompany demand draft(s) of respective registration fees (non-refundable) and/or accommodation fees (non-refundable) as applicable, which should be drawn in favor of “GIAN: Medical Textiles and Tissue Engineering” payable at Jalandhar. Payment can also be done through National Electronic Funds Transfer (NEFT) to the account of “GIAN: Medical Textiles and Tissue Engineering” (Account No.- 65249527611; State Bank of Patiala, IFSC Code: STBP0000841)
2. Scanned copy of duly filled in registration form, and the demand draft/NEFT must be emailed at midhav@nitj.ac.in, before July 05, 2016.
3. Hard copy of the form and draft must also be sent by post/courier to the Course Coordinator before July 12, 2016.
4. Selection will be made purely on First Come First Served Basis and Eligibility. List of selected participants will be made available on the Institute website.
5. Maximum fifty (50) participants will be accommodated in the course.
6. The brochure and the registration form may be downloaded from the Institute website www.nitj.ac.in.

Important Information

1. The students will obtain **academic credits for this course** based on the evaluation and grading process. The host Institute will only provide information on the grading system, subject syllabus, and the academic policy. The home/sponsoring University/Institute of the student will be mainly responsible for transferring academic credits.
2. As per the host Institute and instruction from GIAN, the course consisting of 30 lectures is of TWO credits. The credits can be included in the student's marks for seminar/presentation/college tour or any other suitable subject as per the participating Institute rules.
3. Participants will be provided registration kit & course material.
4. After successful completion of the course, all participants will get participation certificates alongwith grades.
5. No TA, DA will be provided to the participants.
6. Limited accommodation is available in the Institute campus which will be provided on First Come and First Serve Basis on payment mode @
 - Rs 250/day for Students
 - Rs 500/day for Faculty (Limited guest House available - on twin sharing basis)
 - Food on actual basis

The Faculty



Professor Rajendran S

PhD, AIC, FICS, CText FTI
Professor of Biomedical Materials
University of Bolton, Bolton, UK

He has 34 years of research & teaching experience in various areas of textiles and has successfully led a number of research programs in the past funded by companies and government funding agencies as evidenced by the fact that he has so far authored 167 research papers that include 4 books, 16 monographs, 16 book chapters & 9 patents. His books on 'Development in Medical Textiles' & 'Advanced Textiles for Wound Care' received great attention among readers. In addition to academic activities, Professor Rajendran is actively involved in Textile Institute's affairs for many years. He is the recipient of a prestigious Research Fellowship award from the United Nations Industrial Development Organisation (UNIDO)



Prof V K Kothari

Professor Emeritus
Ph.D. (Leeds, U.K.).
Department of Textile Technology
Indian Institute of Technology Delhi, India



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