

About the Course:

The course aims to provide an understanding of the basics with current advancement and challenges associated with operations and uses of bioinstrumentation, processes for microelectromechanical systems and their applications in the biomedical areas. This course is designed to learn the fabrication process of a lab-on-a-chip platform and micro total analysis systems.

Bioinstrumentation plays an important role in biomedical system where instrumentation used as controlling and monitoring various operations. Instrumentation course will enhance the skills of the participants with practical knowledge of designing and control medical instruments and its specifications.

Course Contents:

- **Microfabrication Process:** Introduction to different processes for microfabrication, micromachining, micropatterning, and micromolding. These includes both for optical and non-optical lithography processes.
- **System integration:** Bonding, assembly and packaging and other microfabrication techniques.
- **Microfluidics and Lab-on-a-Chip Platforms:** Introduction to microfluidics, biofluids, properties of biofluids in microchannels and MEMS integration with biological system.
- **BioMEMs:** Micro systems for life sciences, integrated gene analysis system, single cell and single molecule analysis, pharmacokinetic analysis, bioMEMs for hybrid devices and 3D artificial organs, bioMEMs for novel tools in nanobiology.
- **Bioinstrumentation:** Control system, instrumentation design with specifications of equipment, layouts, wiring schematics, instrument index etc.
- **Safety and Reliability Aspects of Biomedical Instrumentations.**
- **Biomedical Signal & Image Processing with LABVIEW/MATLAB.**

**QIP sponsored Short Term Course
on
BioMEMS and Bioinstrumentation
10-12-2018 to 16-12-2018
[Registration form]**

1. Name(Block Letter): _____
2. Designation & Pay scale: _____
3. Institution/Organization: _____
4. Address for communication: _____

E-mail: _____

Ph. No.: _____

5. Highest Academic Qualification: _____

6. Specialization: _____

7. Experience (in years): _____

(a) Teaching: _____

(b) Industrial: _____

8. Amount of TA required as per entitlement mentioned in the brochure (Only for AICTE approved college teachers): _____

9. Mastery in BioMEMS/ Bioinstrumentation: Novice/ Medium/ Expert User

Please register me for the course on "BioMEMS and Bioinstrumentation" to be held at IIT, BHU, Varanasi.

Date: _____

Place: _____

Signature of the Applicant

Sponsorship:

Prof./Dr./Mr./Ms./Mrs./ _____ is an employee of our Institute and his/her application is hereby sponsored. The applicant will be permitted to attend the STC "BioMEMS and Bioinstrumentation" at IIT, BHU, Varanasi, if selected.

Date: _____ Signature of Sponsoring Authority

Designation: _____ Official Seal:

DD No: _____ Date: _____

Bank: _____ Amount: _____

**QIP Sponsored
Short term Course on
BioMEMS
and
Bioinstrumentation,
10-12-2018 to 16-12-2018**



Course Convener:

Dr. Shiru Sharma
SBME (IIT-BHU)

Dr. Marshal
SBME (IIT-BHU)

Organized by

**School of Biomedical Engineering (SBME)
Indian Institute of Technology (BHU)
Varanasi-221005**

E-mail: shiru.bme@itbhu.ac.in / marshal.bme@itbhu.ac.in
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CELEBRATING CENTENARY

IIT (BHU) VARANASI

Indian Institute of Technology (BHU)

IIT (BHU) is a public engineering institute founded in 1919 as an integral part of Banaras Hindu University. IIT (BHU) has residential and co-educational within the larger BHU campus which is spread over nearly 1,300 acres at the southern end of Varanasi on the banks of the River Ganges.

School of Biomedical Engineering

The School of Biomedical Engineering was established by the UGC, India during the 5th Five Year Plan in the year 1978. Being an integral part of Banaras Hindu University. The SBME is involved in Teaching and Research in collaboration with Institute of Medical Sciences (BHU), and with other Departments of IIT(BHU). The School runs the Integrated Dual Degree (IDD) program that offers B. Tech in Bioengineering and M. Tech in Biomedical Technology, besides there is also a two year M. Tech program in Biomedical Engineering. The research credentials of the School is multifarious and interdisciplinary so as to integrate all the thematic of the field in one common pool and thereby achieve progress is unison. Faculty Members of school have expertise in the fields of Electrophysiological signal analysis, Biomaterials, Medical image processing, Neurophysiology, Modelling of Biological system, Biomechanics, Biophysics, Biochemistry, Artificial Intelligence and Bioinstrumentation.

Varanasi

Varanasi is well known as oldest city in the world, situated on the banks of holy river Ganga in Uttar Pradesh. It is the holiest of the seven sacred cities in Hinduism Jainism. Varanasi is located in the middle Ganges valley of North India, in the Eastern part of the state of Uttar Pradesh, along the left crescent-shaped bank of the Ganges, has the headquarters of Varanasi district.

By road, Varanasi is located 797 km southeast of New Delhi, 320 km southeast of Lucknow, 121 km east of Allahabad, and 63 km south of Jaunpur.

Objectives

IIT (BHU), Varanasi is a major QIP Short Term Courses (QIP-STC) Centre which organizes various programmes for quality improvement programme for the technical faculties of AICTE approved institutions from all over India. SBME is also very activity participate in such programmes to promote interdisciplinary leaning in the filed of biomedical engineering. Our School at the IIT (BHU) developed BioMEMS, Biosensors, and Bioinstrumentation programmes for UG and PG students and want to extent its course content and research learning to other academic institutions in the country. With these objectives, the school is planning to have a one week short term course programme for teachers from Engineering Colleges and institutes in the country.

The expectation of this programme are to provide up to date information in the subject area such as Microfabrication Process, System Integration, Microfluidics, Lab-on-a-Chip Platforms, Bioinstrumentation and BioMEMs to the teachers and providing them a learning opportunity and to update with different available tools.

The focus of this will be on advancing the knowledge by providing resources on BioMEMS and Bioinstrumentation in (i) designing and fabricating methods a BioMEMS and device, (ii) Instrumentation design, safety and reliability and finally (iii) covering new developments.

Course content will be taught by our department faculties, experts in the field from our institutions and other institutions of similar reputations in the country.

Participant will be having opportunity to learn the subject content by active participation during the seminars, interacting with faculties and visiting laboratories in the school to have exposure about the current research activities and facilities available at the school and institute level.

Participant will also provide an opportunity to have close interactions with different faculties for establishing network and exploring possibilities for future research or sharing teaching experiences and advices.

How to Apply?

By Email – Scanned copy of the filled in application form (as per the application format given in this brochure) duly endorsed by the forwarding authority to be mailed at

E-mail: stcbiomed@gmail.com

and copy to **coordinator.qip@iitbhu.ac.in** to the Coordinator of QIP by 16-11-2018.

Note: The selected participants have to send a demand draft for 2000/- drawn on any nationalized bank in favour of “**Registrar, IIT (BHU), Varanasi**” as a caution deposite towards confirmation of their participation. The caution money shall be refunded on the last day of the course only if the participant joins the course. Please send your duly filled in application form and demand draft to the course convener at the earliest.

Participation Certification

Certification of participation will be issued to all the participants only after successful completion of the course.

Financial Assistance

Limited number of, first 30, participants from AICTE approved engineering institutions will be eligible for to and fro railway fare via the shortest route in III AC class between the place of work and Varanasi. Further they will be provided free lodging and boarding in the institute guest house/ hostels during the period of the course. Candidates attending the course in full only will be eligible for TA. For all other participants no TA will be paid by IIT (BHU) Varanasi.

IMPORTANT DATES

Receipt of Applications : **16-11-2018.**

Date of Intimation: **17-11-2018.**

Course duration: **December 10th - 16th, 2018.**