



INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR  
CENTRE FOR THEORETICAL STUDIES  
Kharagpur, West Bengal, India. 721302

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**Short term course on**  
**Physics of Fluids - Theory, Applications to Passive and Active Systems**  
**5 - 9 August, 2018**

**AIM:** The objective of this short term course is to introduce the participants the basic physical aspects of fluid mechanics and applications to passive systems, e.g. flow past a rigid sphere, spherical drop, etc. and active systems, e.g. swimming of micro-organisms and bacteria, etc. This course gives sufficient theoretical, numerical techniques to understand and solve such models.

**MAIN TOPICS:** Forces on a body moving in a viscous fluid; simplification of the Navier-Stokes equations for slow motion; passive rigid spherical particle in a viscous fluid; boundary conditions; equations of motion; simple flow fields; hydrodynamic interactions; numerical techniques; swimming of microorganisms in a viscous fluid; boundary conditions; model systems; numerical techniques.

**TARGET AUDIENCE:** Participants of the program are faculty members, students, working professionals from different institutions, research & development organizations and industries. The course is FREE for participants from AICTE institutions, whereas there is a course fee for other participants. However, priority will be given to faculty members of AICTE institutions.

**RESOURCE PERSONS :** Experts from IITs / IISc./ NITs.

**COORDINATORS :**

Prof. P S Burada, Assistant Professor, Department of Physics, IIT Kharagpur

Prof. G P Raja Sekhar, Professor, Department of Mathematics, IIT Kharagpur

e-mail: [phyfluids@cts.iitkgp.ac.in](mailto:phyfluids@cts.iitkgp.ac.in)

## **INSTRUCTIONS :**

All participants from AICTE Institutions must submit the certificate from the institute authority indicating that the institute is a AICTE institute.

As there are only a few seats available, early-bird registrants will be given preference. However, there will be a rigorous selection procedure for the course.

All participants (excluding AICTE institutions) will be responsible for all the expenses, including accommodation, travel, and food. However, on the immediate request from the participants, accommodation may be arranged (on self-payment-basis in some hostels/guestrooms) inside the IIT campus.

On successful completion of the course, certificate of participation will be issued to all the candidates by the Continuing Education Office, IIT Kharagpur, on the recommendation from the Coordinator. Attendance of each of the candidates will be taken regularly.

All the selected participants must bring the original identity card. Please note that, the last date of registration is **20 June 2018**.

## **REGISTRATION PROCEDURE :**

**Step 1:** Fill the Registration Form (see Appendix-B below).

**Step 2:** If you are a participant from AICTE Institution, the "Sponsorship Certificate" (see Appendix-C below) need to be filled by your Institute authority along with the seal. Otherwise, fill the bonafide certificate (see Appendix-D below) duly signed by Institute authority along with the seal.

**Step 3:** If you are not a participant from AICTE Institution, course fee has to be paid strictly by NEFT transaction.

### **Bank account details :**

Bank A/C NO. : 95562200002955, Syndicate Bank, SRIC, IIT Kharagpur.

MICR : 721025103

IFSC : SYNB0009556

SWIFT : SYNBINBB120

Please check the fee structure and other additional information in Appendix-A below. Please note that the registration fee paid is non-refundable under any circumstances even if the applicant does not attend the course.

**Step 4:** Send the soft copy of filled in application along with sponsorship/bonafide certificate, and scan copy of the transaction details (applicable for the participants from non-AICTE Institutions only) to the e-mail: [phyfluids@cts.iitkgp.ac.in](mailto:phyfluids@cts.iitkgp.ac.in) . No need to send the hard copy. However, ensure that all the necessary signatures/stamps are legible properly.

## **Appendix-A : ADDITIONAL INFORMATION**

### **COURSE FEE:**

#### **AICTE College Teachers/Students**

There is no registration fee. Local hospitality including travel, accommodation and food will be covered free of charge. For all AICTE participants TA is limited to maximum of AC-3 tier railway fare on shortest route only or as per rules wherever applicable.

#### **Other Participants**

- (a) Sponsored Industry/ Research Organizations : ₹ 10,000
- (b) Self-sponsored Participants : ₹ 5,000
- (c) IIT Kharagpur students : ₹ 2,000

The above fee does not include TA/DA and accommodation for non-AICTE college participants. However, accommodation for these participants can be booked on payment basis. Such participants should inform their accommodation requirements immediately for guest house booking purpose, however payment to be made by the participant on arrival.

#### **New Technology Guest house :**

Double bed AC Rooms : Single Occupancy ₹ 1000 , Double Occupancy ₹ 1500

#### **Visveswaraya Guest house :**

Double bed AC Rooms : Single Occupancy ₹ 400 , Double Occupancy ₹ 600

### **ADDRESS FOR COMMUNICATION**

**(ALL COMMUNICATIONS ARE TO BE DONE VIA EMAIL/PHONE)**

Prof. P S Burada / Prof. G P Raja Sekhar  
Centre for Theoretical Studies,  
Indian Institute of Technology Kharagpur,  
Kharagpur-721302, West Bengal, India.  
Phone: 03222 283816/283684 (O)

E-mail: [phyfluids@cts.iitkgp.ac.in](mailto:phyfluids@cts.iitkgp.ac.in)

### **ABOUT IIT KHARAGPUR CAMPUS :**

The Indian Institute of Technology, more commonly known as IITKGP is situated about 120 km west of Kolkata. Kharagpur can be reached in about 2 hours by express trains from Howrah railway station of Kolkata or 3 hours by car from Kolkata Airport. Kharagpur is also connected by direct train services to most major cities of the country. The Institute is about 15 minute drive (5 km) from the Kharagpur railway station. Private taxi, auto-rickshaw or cycle-rickshaw can be hired to reach the Institute.

## Appendix-B

### REGISTRATION FORM

#### AICTE Sponsored Short-Term Course On Physics of Fluids - Theory, Applications to Passive and Active Systems

5 - 9 August, 2018

1. Name: \_\_\_\_\_
2. Date of birth: \_\_\_\_\_
3. Designation: \_\_\_\_\_
4. Institution: \_\_\_\_\_
5. Whether the institution has AICTE approval: Yes/ No (If Yes, attach proof)
6. Address for correspondence  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- E-mail : \_\_\_\_\_
- Phone : \_\_\_\_\_
7. Educational qualifications: \_\_\_\_\_
8. Teaching/Research experience (in years) \_\_\_\_\_
9. Accommodation required: Yes / No

#### **Declaration :**

The information provided is true to the best of my knowledge. If selected, I agree to abide by the rules and regulations of the course and shall attend the course for the entire duration without fail.

Place: \_\_\_\_\_

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

Signature:

**Appendix-C**  
**Sponsorship Certificate**  
(AICTE Participants)

Dr. / Mr. / Mrs. / Ms. \_\_\_\_\_

is a full-time employee / student of our Institute and is hereby sponsored to participate in the AICTE Sponsored Short Term Course on “**Physics of Fluids - Theory, Applications to Passive and Active Systems**” to be held during **5 -9 August 2018**. It is also certified that our college/university/institute is approved by AICTE.

Signature and Seal of Head of the Institution

Place: \_\_\_\_\_

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

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**Appendix-D**  
**Bonafide Certificate**  
(Non-AICTE Participants)

Dr. / Mr. / Mrs. / Ms. \_\_\_\_\_

is a full-time employee of our Institute / Company or a bonafide student / faculty/ employee of our Institute and is nominated to participate in the AICTE Sponsored Short Term Course on “**Physics of Fluids - Theory, Applications to Passive and Active Systems**” to be held during **5-9 August 2018**.

Signature and Seal of Head of the Institution

Place: \_\_\_\_\_

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