

**Foundation for Innovation and Technology Transfer (FITT)  
in association with  
Airtel IIT Delhi Centre of Excellence in Telecom - AICET  
Indian Institute of Technology, Delhi**

Announcement

**CERTIFICATE COURSE  
ON  
EMBEDDED SYSTEMS  
AND APPLICATIONS  
IN TELECOM AND MULTIMEDIA**

**Duration: January 12, 2009 to February 22, 2009**

**HIGHLIGHTS**

- Distinguished Faculty from various departments of IIT Delhi.
- Covering the technology of Embedded Systems and its applications.

## **Indian Institute of Technology Delhi**

IIT Delhi, established in 1963, is one of the seven Institutes of Technology in India created as centers of excellence for teaching, research and development in engineering, science and technology. Activities of the institute encompass 13 academic departments and 10 centres of research in various disciplines of engineering and science.

## **Foundation for Innovation and Technology Transfer (FITT) at the IIT Delhi**

The Indian Institute of Technology Delhi took the lead in setting up the Foundation for Innovation and Technology Transfer (FITT) in 1992 with a view to achieving a quantum jump in the level of interaction and collaboration with industry on programmes and projects of mutual interest.

FITT is an autonomous registered society and interface organisation to provide single window service to industry, drawing upon IIT Delhi as the primary resource. The focus of activities in FITT is technology transfer, technology development, continuing education, research partnership with industry and information support services.

## **Airtel IIT Delhi Centre for Excellence in Telecommunication (AICET) at the IIT Delhi**

The Airtel IIT Delhi Centre for Excellence in Telecommunication functions as a part of the Bharti School of Telecommunication in IIT Delhi. The Bharti School is the first school conceptualized and created in IIT Delhi. With over 30,000 sq. ft. of space and three major laboratories, it hosts some of the most popular Engineering and Management programmes on campus.

The Telecom Centre of Excellence has the mandate to perform industry driven contract research, to create and license IPR, to conduct telecom industry-specific learning programmes, to provide incubation facilities and to act as a super-internship node.

## **Academic Coordinators**

Dr. Brejesh Lall, Electrical Engg. Deptt

## **Course Faculty**

Dr. Santanu Chaudhury, Electrical Engg. Dept.

Dr. Subrat Kar, Electrical Engg. Deptt.

Dr. I. N. Kar, Electrical Engg. Deptt.

Dr. Shankar Prakriya, Electrical Engg. Deptt.

Dr. Brejesh Lall, Electrical Engg. Deptt.

## **Background of the Course**

Embedded systems have become the next inevitable wave of technology, finding application in diverse fields of engineering. The PC monolith has broken down; concentrated "core" elements of computing and communication, sensors and actuators have become embeddable in almost everything. Technologies that are inexpensive, low-power, and radically different from classical chip-and-pc-board variety are leading to newer applications and products.

The goal of this course is to impart training to interested graduate engineers with basic background in Hardware & Software, in specialized area of Embedded Systems so that they can develop expertise in developing and deploying embedded systems for Telecom and Multimedia applications.

The foundation modules of the course will provide an exposure to a gamut of technologies associated with embedded systems. Advanced modules will cover a large number of the relevant enabling technologies and applications of embedded systems.

## Eligibility

- Aggregate 60% marks or above in a Graduate degree (4 year BE/B.Tech. or M.Sc) in Electronics/ Electrical Engineering/Computer Science & Engineering/ Electronics Engineering & Telecommunication/Instrumentation or Master of Computer Applications (MCA).
- It is essential to have proficiency in C/C++ and Java, exposure to Computer Architecture, Operating Systems, Computer Networks.
- This course is not meant for undergraduate students.

## Course Modules

The course modules are given below. Each module will be conducted through several sessions of theory classes (each of 1 hour 30 minutes duration) as given below and laboratory/hands-on practical sessions of 4 hours each. The total contact hours are about 125 hours.

### Course modules are:

<b>Foundation Modules</b>	<b>Lecture Sessions</b>	<b>Lab Sessions</b>
Introduction to Embedded Systems	1	
Embedded System Architecture	10	
Embedded Systems Software and operating systems	10	
Embedded System Design	8	
<b>Application Modules</b>		
Applications in Telecom	10	
Networked Embedded Systems	4	
Multimedia Applications	10	
Design Project		20
Guest Lectures	2	

### Course coverage will include

1. Architecture of processors: PIC, ARM, DSP and SoC Architectures
2. Interfacing issues
3. Software design and programming for embedded systems
4. UML based embedded design methodology
5. Internet enabled and networked embedded systems
6. Telecom appliances including sensors and wireless devices for systems like WiMax, 3GPP LTE and Bluetooth.
7. Telecom and Multimedia applications on popular platforms like OMAP, DaVinci
8. Multimedia coding techniques like H.264, AMR (WB), JPEG2000 and implementation on embedded systems

### Course Structure and Duration

The course consists of theory and practical classes spread over a period of about 6 weeks. The course will have about 125 contact hours including hands-on practical sessions. Design project will be done in the time allotted for lab sessions.

In addition, there will be guest lectures by experts from industry and academic institutions.

The theory classes will be conducted at IIT-Delhi in the evenings for 3 hours (6:00 to 9:15 PM) on weekdays and lab practicals on the weekends.

The course duration will be from January 12, 2009 to February 22, 2009

## Course Fee

Fee for the entire course is Rs. 35,000/- (Rupees Thirty five thousand only). The fee, **which is non-refundable**, can be paid in two installments in favour of "FITT, IIT Delhi". The first installment of Rs. 25,000/- is to be paid by those, registering for the whole course and second installment after a month after the course begins.

## Course Material

Each candidate will be provided a course kit consisting of two relevant books and class notes, as per the coverage schedule.

## Selection Process

The course is limited to 70 participants. A Selection Board comprising IIT Delhi faculty may interview applicants shortlisted on the basis of prior performance and background. The decision of the Selection Board regarding selection of candidates will be final.

The brochure and application form for the course will be available on the Net at FITT and IIT Delhi websites: [www.fitt-iitd.org](http://www.fitt-iitd.org), [www.iitd.ernet.in](http://www.iitd.ernet.in) or in person from FITT office. Completed form along with the Application fee of Rs. 100/- in cash or by a demand draft drawn in favour of "FITT, IIT Delhi" should be submitted to FITT office before 4:00 PM, Friday, December 19, 2008.

## Evaluation and Certification

There will be evaluation/test conducted for each module after completion of the module. A grade will be awarded depending on performance in it. At the end of the course, those completing the course successfully will receive a FITT certificate signed by MD, FITT and course coordinators from IIT Delhi.

## Schedule

- Application form available from : Wednesday, November 5, 2008
- Last date for submission of completed forms : Friday, December 19, 2008
- Along with application fee (Rs. 100) : Tuesday, December 23, 2008
- Display the list of selected candidates : Tuesday, December 23, 2008 to Friday, January 2, 2009
- First Installment of fees (Rs. 25,000/-) to be paid : Monday, January 12, 2009
- Commencement of the course : Wednesday, February 4, 2009
- Second installment of course (Rs. 10,000) fees to be paid

## Please Note:

1. No accommodation facility will be arranged on IIT campus for the students of this course.
2. If the course is **not held** for any unavoidable reason, the course fee deposited will be returned. However, if a candidate leaves the course on his own, the fee deposited **will not be** refunded.

For further information please contact/mail to:  
Foundation for Innovation and Technology Transfer (FITT)  
Indian Institute of Technology (IIT)  
Hauz Khas, New Delhi – 110016

Tel: 26597164, Fax: 011-26851169 email: [krityroy@fitt.iitd.ernet.in](mailto:krityroy@fitt.iitd.ernet.in)

Group Email: [fitt\\_embedded@yahoo.co.in](mailto:fitt_embedded@yahoo.co.in), [fitembsys@yahoogroups.com](mailto:fitembsys@yahoogroups.com),

Web site: <http://www.fitt-iitd.org>, <http://www.iitd.ac.in/>, <http://groups.yahoo.com/group/fitembsys>

## FAQ: Frequently Asked Questions

### 1. PLACEMENT

#### 1.1. Will IIT Delhi guarantee placement to participants?

*No. We do not guarantee job placement but we will try to help by informing Industry partners about you.*

### 2. QUALIFICATION

#### 2.1. I am in my final year of B.Tech/B.E/M.Sc. Can I join?

*Normally, no. But if you write to us with the details of the course(s)/projects you have completed and your performance in those course(s), we may be in a better position to consider your case. While we don't encourage undergraduates who have inadequate background preparation for the course, we would make every effort to accommodate an exceptional candidate.*

#### 2.2. I did not do a BE/BTech degree. Can I join?

*The courses you have done are more important than the formal degree you have received. Specifying a BE/BTech/MSc(Electronics) degree is one way of ensuring that you have done courses in Computer Architecture, Operating Systems, Digital Hardware Design, Programming and Computer Networks. If you have any other degree, and still consider yourself prepared for this course, please let us have an opportunity to see the courses (closest to the above areas) you have done - send us the course titles, contents and your performance.*

### 3. FEES

#### 3.1. Can I test my preparedness for the course by paying a fraction of the fees and sitting for the first few classes?

*No. The logistics of running the course require that we know the number of participants in advance, Classrooms have to be booked, experimental setups have to be prepared - we need to know the actual number of participants well in advance.*

### 4. CERTIFICATION

#### 4.1. What will I receive at the end of the course?

*You will get a Certificate of Completion from the FITT signed by the MD, FITT and the Coordinator of the Course.*

### 5. COURSE DESCRIPTION

#### 5.1. What sort of practical experience is provided in this course?

On weekends, you will have lab classes (two sessions of 4 hours each) in the laboratories of EE Dept, IIT Delhi.

#### 5.2. How can I get a neutral opinion about the course?

We run an email list consisting of all the earlier participants of the course. You can email your question to [fitembsys@yahoogroups.com](mailto:fitembsys@yahoogroups.com).

#### 5.3. What is the Foundation of Innovation and Technology Transfer? Is it a part of IIT Delhi?

A small description of FITT and its objectives appears at the beginning of this document. You can see their homepage [www.fitt-iitd.org](http://www.fitt-iitd.org).

**CERTIFICATE COURSE ON EMBEDDED SYSTEMS & APPLICATIONS  
IN TELECOM AND MULTIMEDIA**

**APPLICATION FORM<sup>1</sup>**

The last date for submitting the completed form is Friday, December 19, 2008 - Please return the completed form to :Foundation for Innovation and Technology Transfer (FITT), Deans' Complex, 1<sup>st</sup> Floor, Main Building, IIT Delhi, Hauz Khas, New Delhi - 110016).

1	Name			
		<i>Surname</i>	<i>Middle Name</i>	<i>First Name</i>
2	Guardian's Name:			
		<i>Surname</i>	<i>Middle Name</i>	<i>First Name</i>
3	Date of birth			
		<i>Day</i>	<i>Month</i>	<i>Year</i>

1	Mailing address			
		City	PIN Code	State
	Telephone(s) -Home:		Mobile:	Fax:
	Email(s):			

1	Educational Qualifications:				
	Certificate / Degree with Discipline	Board / Institute / College & University	% Marks / CGPA	Div. / Class / Grade	Year of passing
<i>Class 10</i>					
<i>Class 12</i>					
<i>Graduate</i>					
<i>Post-grad</i>					

1	Work experience (if any)	Experience				
		Name of Firm	Location	From (Month,Year)	To (Month, Year)	Total
	Present					
	Past					

1	Background / knowledge in Hardware and Software	Hardware	•
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	Software	•
1	Any formal training/ education after the first degree	•
2	Why do you want to do this course? (restrict your point-wise answer to 8 lines maximum) ?	•
3	Documents required with completed application form (please check <input type="checkbox"/> )	<input type="checkbox"/> Application fee of Rs. 100 by DD payable to "FITT, IIT Delhi" or cash, along with this completed application form. <input type="checkbox"/> Attested photocopies of Degree/Provisional Certificate(s) inclusive of percentage of aggregate of marks (please reduce all certificates to A4 page size while photocopying) <input type="checkbox"/> Attested photocopies of marksheets for all courses taken during the engineering/IT degree. <input type="checkbox"/> Candidates working in industry must produce 'No objection certificate' from their employer if selected. <input type="checkbox"/> One recent passport size photo pasted / digitally inserted on the front page of the application form.

1	Fees	<ul style="list-style-type: none"> <li>▪ Fees are to be paid as per schedule given below only by Demand Draft payable to '<u>FITT, IIT Delhi</u>'.</li> <li>▪ Fees are non-refundable if the participant leaves the course.</li> <li>▪ <u>Schedule of fees Payment</u> <ul style="list-style-type: none"> <li>▪ First installment : Before 4:00 PM on Friday, January 2, 2009 – Rs. 25,000/-</li> <li>▪ Second and last installment: Before 4:00 PM on Wednesday, February 4, 2009 – Rs. 10,000/-</li> </ul> </li> </ul>
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1	Course duration	<b>January 12, 2009 to February 22, 2009</b>
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THERE WILL BE NO ACCOMMODATION AVAILABLE FOR ANY OF THE PARTICIPANTS OF THIS COURSE ON IIT DELHI CAMPUS.

I have read and agreed to all the above conditions including the fees payment schedule.

Place:

Signature: .....

Date:

Name in capitals: