GOVERNMENT OF TELANGANA  
DEPARTMENT OF TECHNICAL EDUCATION  


Sub:- TECHNICAL EDUCATION – Scheme for setting up Seven (07) Electronics and ICT (E&ICT) Academies –Reg.  
Ref:- D.O. No. L-14011/2/2016-HRD, Dt: 12-04-2017 received from Secretary, Ministry of Electronics & Information Technology/ Electronics Niketan, 6, CGO Complex, New Delhi-11003.  

*****  

With reference above D.O. Letter cited, it is informed that the All the Principals of Govt. Polytechnics of Telangana state are hereby informed that Government of India has informed that Seven (07) Electronics and ICT (E&ICT) Academies are setup to address the requirement of training the faculty in the latest as well as upcoming /emerging areas of Electronics and ICT for Engineering and Polytechnics and also to promote use of ICT tools and techniques amongst the faculty of other streams. This would lead to improve the employability of the students in various streams. These academies have been set up at NIT Warangal, IIITD&M Jabalpur, IIT Guwahati, NIT Patna, IIT, Kanpur, IIT Roorkee and MNIT Jaipur.  

1. In this connection, All the Principals of Govt. Polytechnics of Telangana state are requested to give wide publicity of the above among staff members from different branches to volunteer and register for above the training Faculty Development Programmes (FDPs) through NKN infrastructure. Further it is informed that department would have ICT-Coordinator at state level who will assist SBTET & CTE and they will be given certain responsibilities and will be recognized as the departments academic leaders.  

2. The Principals also are requested to send the names of participants who are interested in attending the programme on 23-06-2017 to 03-07-2017 at NIT Warangal.  

The above programme shall be submitted to this office on or before 18-05-2017.  

Encl: As above  

Sd/- A. VANI PRASAD  
COMMISSIONER  

To  
The Principals of All Govt. Polytechnics under control of Department of Technical Education.  
Copy to Secretary, SBTET, TS, Hyderabad.  
Copy to RJD of Technical Education, Hyderabad.  
Copy to Stock File / Spare.  

//F.B.O.//
You may be aware that Government has approved a Scheme for setting up seven (07) Electronics and ICT (E&ICT) Academies to address the requirement of training the faculty of the country in the latest as well as upcoming/emerging areas of Electronics and ICT for Engineering and polytechnics; and, also to promote use of ICT tools and techniques amongst the faculty of other streams in the country. This would lead to improve the employability of the students in various streams. These academies have been set up at NIT Warangal, IIITD&M Jabalpur, IIT Guwahati, NIT Patna, IIT Kanpur, IIT Roorkee and MNIT Jaipur.

2. In this regard, it may be seen that Electronics and ICT sectors are characterized by fastest emergence of new technologies leading to high rate of obsolescence leaving very short response time to absorb the technology, adopt the same and evolve new technologies/solutions. Hence, there is a need to ensure that latest trend and technology in the sector are introduced in the academic sector in a time bound manner. Keeping this in view, the above E&ICT Academies (except IIT Kanpur) are now going to conduct the Faculty Development Programmes (FDPs) through NKN infrastructure during May - July, 2017 as per details given in the enclosed Common Brochure.

3. We understand that the Technical Education Wing of your directorate has been entrusted with the responsibility of looking after Post Graduate, Degree and Diploma level Institutions in Engineering field in your state. Technical Education Department has full administrative control over all Technical Institutions of the State. The above programs would be quite useful to young and other faculty and would provide them with industry oriented skills on latest curriculum and pedagogy, which would enhance the employability aspects of the undergraduate engineering students. The training of faculty in your State is being addressed by the Electronics and ICT Academy as per Annexure.

4. We therefore request you to kindly instruct all engineering institutions in your jurisdiction to nominate the faculty of undergraduate courses to attend the above faculty development courses planned to be conducted by the said academy.

With regards,

(Sanjiv Mittal)

Encl: As above

To: Director, Directorate of Technical Education of all States/ UTs (List enclosed)

Copy to: AICTE, UGC, Director/ Chief Investigator of the concerned Academy (List enclosed)
Annexure

Allocation of States/UTs to the Academies is as under:

<table>
<thead>
<tr>
<th>S. No.</th>
<th>E&amp;ICT Academy</th>
<th>Catering States/UTs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Madhya Pradesh: IIITD&amp;M-</td>
<td>Chhattisgarh, Madhya Pradesh, Maharashtra</td>
</tr>
<tr>
<td></td>
<td>Jabalpur</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Telangana: NIT-Warangal</td>
<td>Andhra Pradesh, Karnataka, Puducherry, Andaman and Nicobar Island, Telangana, Goa</td>
</tr>
<tr>
<td>3</td>
<td>Bihar: NIT-Patna</td>
<td>Bihar, Jharkhand, Odisha, West Bengal</td>
</tr>
<tr>
<td>4</td>
<td>Assam: IIT-Guwahati</td>
<td>Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Tripura, Sikkim</td>
</tr>
<tr>
<td>5</td>
<td>Uttarakhand: IIT-Roorkee</td>
<td>Jammu &amp; Kashmir, Himachal Pradesh, Uttarakhand</td>
</tr>
<tr>
<td>6</td>
<td>Rajasthan: MNIT-Jaipur</td>
<td>Gujarat, Rajasthan, Dadra &amp; Nagar Haveli, Daman &amp; Diu</td>
</tr>
</tbody>
</table>
List of Address for D.O. letter No. 1-14011/2/2016-HRD dated 12.04.2017

To,

1. Shri Chandrashekhar V. Oak (IAS)
   Director
   Directorate of Technical Education
   Mumbai 3, Mahapalika Marg.
   Post Box No. 1967, Opp Metro Cinema
   Mumbai 400 001, Maharashtra

2. Dr. Veerendra Kumar
   Director
   Directorate of Technical Education
   Madhya Pradesh 4th Floor
   Satpura Bhawan
   Bhopal – 462004, Madhya Pradesh

3. Shri S.S. Bajaj, IFS
   Director
   Directorate of Technical Education
   Chhattisgarh HOD Building, Block-3
   3rd & 4th Floor, Indravati Bhawan
   Naya Raipur 492002, Chhattisgarh

4. Shri G.S. Panda Das, IAS
   Spl. Commissioner
   Department of Technical Education
   5th and 6th Floors, B.R.K.R. Bhavan
   Tankbund Road, Saifabad
   Hyderabad- 500 063, Andra Pradesh

5. Shri H. U. Talawar
   Director
   Department of Technical Education
   Tantrik Shikshan Bhavan
   Palace Road,
   Bangalore 560 001, Karnataka

6. Shri Y.L.N. Reddy
   Director
   Directorate of Higher & Technical Education
   Pipmate Complex, Lawspet Road
   Puducherry, 605008, Puducherry

7. Smt. Tanvi Garg, IAS
   Secretary-cum-Director
   Department of Education
   O/o Secretary (GA),
   Andaman and Nicobar Administration,
   Secretariat, Port Blair 744 101, Andaman & Nicobar Island
9. Shri Vivek B. Kamat
   Director
   Directorate of Technical Education
   DTE Building, Alto-Porvorim
   Bardez, GOA, Pin 403521, Goa

10. Shri Atul Sinha, ITS
    Director
    State Board of Technical Education
    4th Floor, Technology Bhawan
    Vishweshariya Bhawan Campus
    Bailey Road, Patna - 800 015, Bihar

11. Shri S. V. Sah
    Secretary
    State Board of Technical Education
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    Namkum-Tupudana Road
    Ranchi, Jharkhand-834001, Jharkhand

12. Shri Balwant Singh, IAS
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    Directorate of Technical Education & Training
    Killa Maidan, Buxi Bazar
    Cuttack 753001, Odisha

13. Shri Hirdyesh Mohan
    Principal Secretary
    Dept. of Technical Education, Training & Skill Development
    Karigori Bhaban, 2nd Floor,
    Action Area: III, Plot: B-7, New Town, Rajarhat
    Kolkata-700160, West Bengal

14. Dr. Atul Bora
    Director
    Directorate of Technical Education
    Kahilipara
    Guwahati-781019, Assam

15. Dr. Joram Begi
    Director
    Office of Directorate of Higher & Technical Education
    City-Itanagar, Pin-791111, Arunachal Pradesh

16. Shri Kh. Rajhandra Singh
    Controller
    Controller, Technical Education
    Takyel, Imphal, Manipur
    Manipur-795001
17. Shri Ram Singh, IAS
   Director
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   Addl. Secretariat Building, 1st Floor
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18. Shri R.Lalrosanga
   Director
   Directorate of Higher & Technical Education
   Mac Donald Hill, Zarkawt,
   Aizawl 796012, Mizoram

19. Shri. Athili Kathipri
   Additional Director & HoD
   Directorate of Technical Education
   Below New Secretariat
   Thizama Road, Kohima-797001, Nagaland

20. Dr. B. Palit
    Director
    Directorate of Higher Education
    Old Secretariat Building P.O: Agartala
    Tripura West, PIN: 799001, Tripura

21. Shri D. K Pradhan
    Director
    Directorate of Technical Education
    Human Resource Development Department
    Tashiling Secretariat Gangtok,
    East Sikkim 737101, Sikkim

22. Ms. Shabnum Shah Kamili, KAS
    Director
    Officers of Directorate of Technical Education
    Jammu & Kashmir
    Jammu: Bikram Chowk Jammu- 180001

23. Shri Rajeshwar Goel HAS
    Director
    Directorate of Technical Education
    Vocational & Industrial Training Himachal Pradesh
    Sundernagar, Distt. Mandi
    Himachal Pradesh -175018, Himachal Pradesh

24. Dr. Pankaj Kumar Pandey
    Director
    Directorate of Technical Education
    N.C.C.Block, Polytechnic Campus
    Srinagar (Garhwal) - 246174, Uttarakhand

25. Shri S. B. Raval, IAS
    Commissioner
    Office of the Commissioner Technical Education
    Block No. 2, 6th Floor
    Karmyogi Bhavan, Sector-10-A
    Gandhinagar - 382 010, Gujarat
26. Shri Raj Hans Upadhyay (IAS)
   Additional Chief Secretary
   Directorate of Technical Education
   W-6, Gaurav Path, Residency Road
   Jodhpur - 342032, Rajasthan

27. Shri Seju P. Kuruvilla, IPS
   Secretary
   Department of Education
   First Floor, PWD Campus
   Aml, Silvassa - 396230
   Dadra & Nagar Haveli

28. Shri Seju P. Kuruvilla, IPS
   Secretary
   Department of Technical and Higher Education
   U.T. Administration of Daman and Diu
   Secretariat, Moti Daman - 396220, Daman & Diu

Copy for information to:

1. Professor Ved Prakash
   Chairman
   University Grants Commission (UGC)
   Bahadur Shah Zafar Marg,
   New Delhi - 110 002

2. Prof. Anil D. Sahasrabudhe
   Chairman
   All India Council for Technical Education
   7th Floor, Chanderlok Building
   Janpath, New Delhi-110 001

3. Prof. Surendra Prasad
   Chairperson,
   National Board of Accreditation,
   NBCC Place, East Tower, 4th floor
   Bhisham Pitamah Marg
   Pragati Vihar, New Delhi 110003

4. Prof Pramod Kumar Jain
   Director
   IIITD&M - Jabalpur
   Pin - 482005

5. Prof. Aparajita Ojha,
   Chief Investigator
   IIITD&M - Jabalpur
   Pin - 482005

6. Prof. Asok De,
   Director,
   National Institute of Technology, Patna
   Ashok Rajpath, Patna-800005
7. Dr. Bharat Gupta  
Chief Investigator  
National Institute of Technology, Patna  
Pin – 800005

8. Prof. Gautam Biswas,  
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Guwahati 781039, Assam

9. Prof. Ratnajit Bhattacharjee  
Chief Investigator  
Indian Institute of Technology, Guwahati,  
Guwahati 781039, Assam

10. Prof. G. R. C. Reddy  
Director  
National Institute of Technology, Warangal  
Pin – 506 004

11. Prof. N.V.S.N. Sarma  
Chief Investigator  
National Institute of Technology, Warangal  
Pin – 506 004

12. Prof. Ajit K. Chaturvedi,  
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Roorkee, Uttarakhand 247667

13. Dr. Sanjeev Manhas  
Chief Investigator  
IIT Roorkee  
Pin - 247667

14. Prof. Udaykumar R Yaragatti,  
Director,  
Administrative Block –I,  “MNIT Campus,  
JLN Marg, Jaipur-302017

15. Prof. Vineet Sahula  
Chief Investigator  
MNIT Jaipur  
Pin – 302017
India is fast emerging as a world power in Information, Communications Technology and Electronics (ICTE) sectors. To complement its growth and further development, there is an ever-increasing need for trained professionals with specialization in this space. This includes training of professionals not only in existing and changing technologies but also in the fields of R&D and electronics manufacturing. This will specifically be aimed at the ICTE sector to create a substantial resource pool of talent and generate ample opportunities for entrepreneurs.

Ministry of Electronics & Information Technology (MeitY) has approved a scheme and set up Electronics and ICT Academies at 07 (seven) institutions viz. IIT Guwahati, IIT Kanpur, NIT Warangal, NIT Patna and IIITDM Jabalpur (all five under Category-A); and IIT Roorkee, MNIT Jaipur (both under Category B). The Ministry had earlier setup two ICT Academies at Tamil Nadu and Kerala respectively. Estimated cost and targets for the Electronics and ICT Academy in the two Categories for a period of four years are as under:

<table>
<thead>
<tr>
<th>Category</th>
<th>Total Outlay</th>
<th>Internal Revenue Generation</th>
<th>Grants-in-Aid from Central Government</th>
<th>Training Target (Faculty members)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category-A</td>
<td>Rs. 25 crore</td>
<td>Rs. 7.50 crore</td>
<td>Rs. 17.50 crore</td>
<td>16,000</td>
</tr>
<tr>
<td>Category-B</td>
<td>Rs. 10 crore</td>
<td>Rs. 3.00 crore</td>
<td>Rs. 7.00 crore</td>
<td>6,400</td>
</tr>
</tbody>
</table>

These Academies are aimed at faculty/mentor development and upgradation to improve the employability of the graduates, diploma holders in various streams, through collaboration of States/Union Territories. Each Academy is being provided funding support for four years and is expected to generate revenue by charging fee and taking up other activities to meet the recurring cost in a gradual manner and become self-sustainable by the end of fourth year onwards. All these Academies will cater to the requirements of identified neighbouring States and UTs also. Brief information about all the Academies is available at: http://Meity.gov.in/content/scheme-financial-assistance-setting-electronics-andict-academies.

**Activities of the Academies**

- Faculty development for
  - Specialized training with hands-on on basic and advanced level topics for Engineering streams and
  - Domain based training on use of ICT tools and techniques for non-engineering streams
- Training and consultancy services for industry
- Curriculum development for Industry
- Continuing Education programme for students / working professionals
- Design, Develop and Deliver specialized modules for specific research areas
- Providing advice and support for technical incubation and entrepreneurial activities

**About Summer Courses**

Faculty Development Programmes in core areas of Electronics and Information & Communication Technology (ICT) streams have been planned by academies for delivery during Summer (i.e., May - July 2017). All these summer courses will be offered through National Knowledge Network (NKN) by inviting experts from IITs, NITs, IIIIs and other premier institutes/industries. In addition, local course coordinators at respective academies will take care of practicals and practice sessions. The following six courses would be taken up for delivery during forthcoming summer vacation:
<table>
<thead>
<tr>
<th>S.No.</th>
<th>Course Name</th>
<th>Key Coordinating Academy</th>
<th>Proposed Dates From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Fundamentals of Computer Networks and Security</td>
<td>NIT Patna</td>
<td>24-5-2017</td>
<td>02-6-2017</td>
</tr>
<tr>
<td>3</td>
<td>Digital VLSI Circuit Design</td>
<td>IIT Roorkee</td>
<td>03-6-2017</td>
<td>12-6-2017</td>
</tr>
<tr>
<td>4</td>
<td>Introduction to Web Development</td>
<td>IIT Roorkee</td>
<td>13-6-2017</td>
<td>22-6-2017</td>
</tr>
<tr>
<td>5</td>
<td>Fundamentals of Databases</td>
<td>NIT Warangal</td>
<td>23-6-2017</td>
<td>03-7-2017</td>
</tr>
<tr>
<td>6</td>
<td>Introduction to Data Structures and Programming in C</td>
<td>IIITDM Jabalpur</td>
<td>01-7-2017</td>
<td>10-7-2017</td>
</tr>
</tbody>
</table>

**Target Beneficiaries:** Interested faculty of engineering/technical institutions are eligible to attend these summer courses.

**Availability of seats at each offering Academy:** Fifty (50) seats are available for each summer course to be offered at each academy. Participants will be selected based on first-cum-first-serve basis by each academy. Ten (10) more seats are also available for participants from industry. Selected participants will be communicated through e-mail/notified in ERIC Academy websites.

**Course duration:** Each summer course is designed for 80 hours (Theory Lectures: 35 hours, Practicals: 35 hours, and Pedagogy, Soft skills & Demo teaching/Case study presentation by participants: 10 hours)

**Accommodation:** Boarding and Lodging will be provided at free of cost. No Travel Allowance will be paid to the participants.

**Registration Fee for each Summer Course:**
- Faculty members: Rs. 3,000/- (Three Thousand rupees only)
- Persons from Industry: Rs. 9,000/- (Nine Thousand rupees only)

**Mode of Payment:**

<table>
<thead>
<tr>
<th>Academy Name</th>
<th>Participants belonging to States/ UTs</th>
<th>Payment through DD / Online transfer</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIT Warangal</td>
<td>Telangana, Andhra Pradesh, Karnataka, Goa, Andaman and Nicobar Islands, Puducherry</td>
<td>Demand Draft in favor of &quot;Director, NIT Warangal&quot; payable at NIT Warangal or On-line Mode: Account Name: Electronics &amp; ICT Academy NITW Account No: 62423775910 and IFSC: SBHY0020149</td>
</tr>
<tr>
<td>IIT Guwahati</td>
<td>Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Tripura, and Sikkim</td>
<td>Demand Draft in favor of &quot;Registrar, IIT Guwahati&quot; Payable at Guwahati or On-line Mode: Account Name: IIT Guwahati R&amp;D &amp; ICT ACADEMY Account No. 36071160089 and IFSC: SBIN0014262</td>
</tr>
<tr>
<td>IIITDM Jabalpur</td>
<td>Madhya Pradesh, Chhattisgarh, and Maharashtra</td>
<td>Demand Draft in favor of &quot;Electronics and ICT Academy, IIITDMJ&quot; Payable at Jabalpur or On-line Mode: Account Name: Electronics and ICT Academy, IIITDMJ, Jabalpur Account No. 50302042708 and IFSC: ALLA0212433</td>
</tr>
<tr>
<td>MNIT Jaipur</td>
<td>Rajasthan, Gujarat, Dadra &amp; Nagar Haveli, and Daman &amp; Diu</td>
<td>Demand draft in favor of &quot;Electronics and ICT Academy, MNIT Jaipur&quot; Payable at Jaipur or Online Mode: Account Name: Electronics &amp; ICT Academy, MNIT, Jaipur Account No: 676801700483, IFSC: ICIC0006768</td>
</tr>
</tbody>
</table>
Note: Participants belonging to a state other than the states mentioned above can apply to any of the nearest academies as per their choice.

How to apply:
- A duly filled-in application form in the prescribed format duly signed and sponsored by the Head of the Institute to which candidate belongs (along with demand draft / wire transfer details) should reach by post to the local coordinator of the participating academy.
- Government of India norms will be followed for SC/ST category participants.
- The application form along with the Registration fee can also be submitted in the online mode to Local Coordinator of the respective academy.

Note: Refer offering Academies websites for complete postal address and other details of summer courses.

Last Date for Submission of Applications and Intimation of Selection:

|--------------------------------------------|--------------------------------------------------------|-------------------------------------------------|-------------------------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|

The following are the details of summer courses being offered during May - July 2017:

**Course 1: Fundamentals of Analog and Digital Communication System**

(Offered during 13th - 22nd May, 2017)

<table>
<thead>
<tr>
<th>Key Coordinating Academy &amp; Local Coordinator</th>
<th>Participating Academies and Local Coordinator Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>IIT Guwahati - Prof. Ratnajit Bhattacharjee</td>
<td>IIT, Guwahati - Prof. Ratnajit Bhattacharjee</td>
</tr>
<tr>
<td><a href="mailto:ratnajit@iitg.ernet.in">ratnajit@iitg.ernet.in</a></td>
<td><a href="mailto:ratnajit@iitg.ernet.in">ratnajit@iitg.ernet.in</a></td>
</tr>
<tr>
<td>MNIT Jaipur - Dr. Satyasai J. Nanda - <a href="mailto:sjnanda.ece@mnit.ac.in">sjnanda.ece@mnit.ac.in</a></td>
<td>MNIT Jaipur - Dr. Satyasai J. Nanda - <a href="mailto:sjnanda.ece@mnit.ac.in">sjnanda.ece@mnit.ac.in</a></td>
</tr>
<tr>
<td>NIT Patna - Dr. Seemanti Saha - <a href="mailto:seemanti@nitp.ac.in">seemanti@nitp.ac.in</a></td>
<td>NIT Patna - Dr. Seemanti Saha - <a href="mailto:seemanti@nitp.ac.in">seemanti@nitp.ac.in</a></td>
</tr>
<tr>
<td>IIT Roorkee - Dr. S. Chakroborty - <a href="mailto:scecefecl@iitr.ac.in">scecefecl@iitr.ac.in</a></td>
<td>IIT Roorkee - Dr. S. Chakroborty - <a href="mailto:scecefecl@iitr.ac.in">scecefecl@iitr.ac.in</a></td>
</tr>
<tr>
<td>NIT Warangal - Dr. V. V. Mani - <a href="mailto:vvmani@nitw.ac.in">vvmani@nitw.ac.in</a></td>
<td>NIT Warangal - Dr. V. V. Mani - <a href="mailto:vvmani@nitw.ac.in">vvmani@nitw.ac.in</a></td>
</tr>
</tbody>
</table>
Detailed Fundamentals of Analog and Digital Communication System:

<table>
<thead>
<tr>
<th>S.No</th>
<th>Module Name</th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Review of Fundamental Concepts and Mathematical preliminaries</td>
<td>Elements of an electrical communication system; Characteristics of communication channel and their mathematical modeling; Signal models: deterministic and random; signal classification; Convolution Integral and response of LTI system; Fourier series representation, Parseval's theorem; Fourier transform; Hilbert transform; Random Process: mean, correlation and covariance; stationary and ergodic processes; power spectral density; Gaussian Process.</td>
</tr>
<tr>
<td>2</td>
<td>Analog Communication Systems</td>
<td>Concept of modulation and demodulation, Continuous wave (CW) modulation: amplitude modulation (AM) - double sideband (DSB); double sideband suppressed carrier (SSBSC) and vestigial sideband (VSB) modulation, angle modulation - phase modulation (PM) &amp; frequency modulation (FM); narrow and wideband FM. Representation of narrowband noise; receiver model, signal to noise ratio (SNR), noise figure, noise temperature, noise in DSB-SC, SSB, AM &amp; FM receivers, pre-emphasis and de-emphasis.</td>
</tr>
<tr>
<td>3</td>
<td>Pulse Modulation</td>
<td>Sampling process, sampling theorem for band limited signals; pulse amplitude modulation (PAM); pulse width modulation (PWM); pulse position modulation (PPM); pulse code modulation (PCM); line coding; differential pulse code modulation; delta modulation and adaptive delta modulation, Basics of time division multiplexing, noise consideration in PAM and PCM systems.</td>
</tr>
<tr>
<td>4</td>
<td>Basic digital modulation schemes and signaling over AWGN channels</td>
<td>Overview of geometric representation of signals, Gram-Schmidt Orthogonalization procedure; Basic digital modulations schemes: Phase shift keying (PSK), amplitude shift keying (ASK), frequency shift keying (FSK) and Quadrature amplitude modulation (QAM); coherent demodulation and detection; probability of error. Basics of equivalent complex baseband representation of digitally modulated signals.</td>
</tr>
<tr>
<td>5</td>
<td>Hands on (circuit design, assembly and measurements)</td>
<td>Amplitude modulation and demodulation (AM with carrier &amp; DSBSC AM); frequency modulation and demodulation (using VCO &amp; PLL); automatic gain control (AGC); pulse width modulation (PWM); pulse code modulation (PCM); pseudo-random (PN) sequence generation; Generation and detection of signals for binary phase shift keying (BPSK) and binary frequency shift keying (BFSK). BER performance of BPSK signals.</td>
</tr>
</tbody>
</table>

**Course 2: Fundamentals of Computer Networks and Security**

(Offered during 24th May - 2nd June, 2017)

**Key Coordinating Academy & Global Coordinator**

NIT Patna - Prof. M. P. Singh

mps@nitr.ac.in

**Participating Academies and Local Coordinator Details**

<table>
<thead>
<tr>
<th>Academy</th>
<th>Coordinator</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIT Patna</td>
<td>Dr. Ditipriya Sinha</td>
<td><a href="mailto:ditipriya.cse@nitr.ac.in">ditipriya.cse@nitr.ac.in</a></td>
</tr>
<tr>
<td>IIT Guwahati</td>
<td>Dr. Santosh Biswas</td>
<td><a href="mailto:santosh_biswas@iitg.ernet.in">santosh_biswas@iitg.ernet.in</a></td>
</tr>
<tr>
<td>IIITDM Jabalpur</td>
<td>Dr. Ruchir Gupta / Dr. V.K. Jain</td>
<td><a href="mailto:rgupta@iiitdm.ac.in">rgupta@iiitdm.ac.in</a> / <a href="mailto:vkjain@iiitdm.ac.in">vkjain@iiitdm.ac.in</a></td>
</tr>
<tr>
<td>MNIT Jaipur</td>
<td>Dr. Emmanuel S. Pilli</td>
<td><a href="mailto:espilli.cse@mnit.ac.in">espilli.cse@mnit.ac.in</a></td>
</tr>
<tr>
<td>IIT Roorkee</td>
<td>Dr. Sateesh K Peddoju</td>
<td><a href="mailto:drpskfec@iitr.ac.in">drpskfec@iitr.ac.in</a></td>
</tr>
<tr>
<td>S.No.</td>
<td>Module Name</td>
<td>Topics</td>
</tr>
<tr>
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</tr>
<tr>
<td>2</td>
<td>Principles of Network Applications</td>
<td>Principles of Network Applications; The Web and HTTP; File Transfer: FTP; Electronic Mail in the Internet: SMTP; DNS -The Internet’s Directory Service; Peer-to-Peer Applications</td>
</tr>
<tr>
<td>3</td>
<td>Overview of Layers</td>
<td>TCP/IP and OSI Model, Protocol Layers: Hierarchy, Services</td>
</tr>
<tr>
<td>4</td>
<td>Link Layers</td>
<td>Introduction and Services; Error-Detection and Correction Techniques; Multiple Access Links and Protocols, Link-Layer Addressing &amp; ARP, Ethernet, Link-Layer Switches, PPP</td>
</tr>
<tr>
<td>5</td>
<td>Addressing at layers</td>
<td>Physical Addresses, Logical Addresses, Port Addresses, Specific Addresses</td>
</tr>
<tr>
<td>6</td>
<td>Introduction of transport layer</td>
<td>Introduction and Transport-Layer Services, Relationship Between Transport and Network Layers, Overview of the Transport Layer in the Internet, Multiplexing and Demultiplexing</td>
</tr>
<tr>
<td>7</td>
<td>Connectionless Transport</td>
<td>UDP, UDP Segment Structure, UDP Checksum, Principles of Reliable Data Transfer, Building a Reliable Data Transfer Protocol, Pipelined Reliable Data Transfer Protocols, Go-Back-N, Selective Repeat, Hybrid</td>
</tr>
<tr>
<td>8</td>
<td>Connection-Oriented Transport</td>
<td>TCP, TCP Connection, TCP Segment Structure, Round-Trip Time Estimation and Timeout, Reliable Data Transfer, Flow Control, TCP Connection Management</td>
</tr>
<tr>
<td>9</td>
<td>Principles of Congestion Control</td>
<td>Causes and the Costs of Congestion, Approaches to Congestion Control, Network-Assisted Congestion-Control Example: ATM ABR Congestion Control, TCP and UDP Fairness</td>
</tr>
<tr>
<td>13</td>
<td>Pedagogy, Soft Skills &amp; Demo Teaching by Participants</td>
<td></td>
</tr>
</tbody>
</table>
Course 3: Digital VLSI Circuit Design
(offered during 3rd - 12th June, 2017)

Key Coordinating Academy & Global Coordinator
IIT Roorkee - Dr. Bishnu Das - bpdasfiec@iitr.ac.in
Participants Academies and Local Coordinator Details
IIITDM Jabalpur - Prof. P.N. Kondekhar - pnkondekhar@iiitdmj.ac.in
NIT Warangal - Dr. P. Srihari Rao - patri@nitw.ac.in

Module details of Digital VLSI Circuit Design:

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Module Name</th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Fundamental Concepts</td>
<td>CMOS device/interconnect fundamentals: Basic MOS models, MOSFET I-V characteristics, MOSFET capacitances, parasitic resistances, introduction to SPICE level, lumped and distributed RC model for interconnects, CMOS process flow, Layout and design rules. CMOS inverter: Static characteristics, power consumption, dynamic behaviour, power consumption.</td>
</tr>
<tr>
<td>2.</td>
<td>Design of Basic Building Blocks</td>
<td>Combinational logic: Transistor sizing in static CMOS logic gates, dynamic logic, pass-transistor logic, power consumption of combinational circuits. Sequential Circuit Elements: Static latches and flip-flops (FFs), dynamic latches and FFs, Schmitt trigger, monostable and astable circuits, power consumption of sequential circuits.</td>
</tr>
<tr>
<td>3.</td>
<td>Concepts for Analysis and Design</td>
<td>Method of Logical Effort: Logical Effort delay model, buffer design using the method of logical effort, static MOS logic gate sizing considering method of logical effort, Stage sizing in combinational multi-stage circuits. Timing and Power: Timing fundamentals, clock distribution, jitter, self-timed circuit design, synchronizers and arbiters, basic building blocks of PLLs, clock synthesis and synchronization using PLLs, power consumption in CMOS multi-stage.</td>
</tr>
<tr>
<td>4.</td>
<td>Multi-Stage Circuits and Subsystems</td>
<td>CMOS Memories and Array Structures: MOS-ROM, SRAM cell, memory peripheral circuits, signal to noise ratio, power dissipation. Digital CMOS Circuits: Decoders, Multiplexers, data path and control paths, power consumption in data paths.</td>
</tr>
<tr>
<td>5.</td>
<td>Pedagogy, Soft Skills &amp; Demo Teaching by Participants</td>
<td></td>
</tr>
</tbody>
</table>
Course 4: Introduction to Web Development
(Offered during 13th - 22nd June, 2017)

Key Coordinating Academy &
Global Coordinator
IIT Roorkee -
Prof. Suneet Manhas
smanhas333@gmail.com

Participating Academies and Local Coordinator Details

<table>
<thead>
<tr>
<th>Academy</th>
<th>Local Coordinator</th>
<th>Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>IIT Roorkee</td>
<td>Dr. Sudip Ray</td>
<td><a href="mailto:sudiproy.fcs@iitr.ac.in">sudiproy.fcs@iitr.ac.in</a></td>
</tr>
<tr>
<td>IIT Guwahati</td>
<td>Prof. Rohit Sinha</td>
<td><a href="mailto:rsinha@iitg.ernet.in">rsinha@iitg.ernet.in</a></td>
</tr>
<tr>
<td>IIITDM Jabalpur</td>
<td>Dr. Atul Gupta</td>
<td><a href="mailto:atul@iiitdmj.ac.in">atul@iiitdmj.ac.in</a></td>
</tr>
<tr>
<td>MNIT Jaipur</td>
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<td><a href="mailto:sjnanda.ece@mnit.ac.in">sjnanda.ece@mnit.ac.in</a></td>
</tr>
<tr>
<td>NIT Patna</td>
<td>Prof. Anand Sankar Tiwari</td>
<td><a href="mailto:anand@nitp.ac.in">anand@nitp.ac.in</a></td>
</tr>
<tr>
<td>NIT Warangal</td>
<td>Dr. T. Ramakrishnanud</td>
<td><a href="mailto:trk@nitw.ac.in">trk@nitw.ac.in</a></td>
</tr>
</tbody>
</table>

Module details of Introduction to Web Development:

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Module Name</th>
<th>Topics</th>
</tr>
</thead>
</table>

| 2.    | Scripting                               | **JavaScript:** Introduction, JavaScript Basics, Variables, Arrays and Operators, Event Handlers, Built-In JavaScript Objects, JavaScript Form Validation Conditionals and Loops, Debugging and Testing with Chrome.  
**Introduction to AJAX:** Intro to Ajax and the Node.js Server, Ajax Basics-The XMLHttpRequest Object, Using an XMLHttpRequest Object, Handling the Response, jQuery, Passing Data, Ajax Applications, CORS/JSONP. |

| 3.    | Server-side Programming                 | **Server-side Programming:** Introduction to active server pages (ASP), Introduction to Java Server Page (JSP), JSP Application Design, JSP objects, Conditional Processing, Declaring variables and methods, sharing data between JSP pages.  
**PHP (Hypertext Preprocessor):** Introduction, syntax, variables, strings, operators, if-else, loop, switch, array, function, form, mail, file upload, session, error, exception, filter, PHP-ODBC, Text. Introduction to web Server and Installation of XAMPP server. |

| 4.    | Introduction to MySQL                   | **Introduction to MySQL:** Designing Databases, MySQL Functions, Database Structures, Doing Advanced Queries, Advanced MySQL Concepts, Managing Users and Privileges, Backing Up and Restoring MySQL Databases, MySQL Options File and Configuring and Tuning the MySQL Server. |

| 5.    | Pedagogy, Soft Skills & Demo Teaching by Participants |                                                                                          |
Course 5: Fundamentals of Databases

(Offered during 23rd June - 3rd July, 2017)

Key Coordinating Academy & Global Coordinator

Participating Academies and Local Coordinator Details

<table>
<thead>
<tr>
<th>Institute</th>
<th>Coordinator Name</th>
<th>Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIT Warangal</td>
<td>Dr. R.B.V. Subramanyam</td>
<td><a href="mailto:rbvs66@gmail.com">rbvs66@gmail.com</a></td>
</tr>
<tr>
<td>IIT Guwahati</td>
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<tr>
<td>IIITDM Jabalpur</td>
<td>Dr. Pritee Khanna</td>
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</tr>
<tr>
<td>MNIT Jaipur</td>
<td>Dr. Dinesh Gopalani</td>
<td><a href="mailto:dgopalani@gmail.com">dgopalani@gmail.com</a></td>
</tr>
<tr>
<td>NIT Patna</td>
<td>Dr. Md. Tanwir Uddin Haider</td>
<td><a href="mailto:tanwir@nitp.ac.in">tanwir@nitp.ac.in</a></td>
</tr>
<tr>
<td>IIT Roorkee</td>
<td>Dr. Biplab Banerjee</td>
<td><a href="mailto:getbiplab@iitr.ac.in">getbiplab@iitr.ac.in</a></td>
</tr>
</tbody>
</table>

Module details of Fundamentals of Databases:

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Module Name</th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Introduction</td>
<td>Introduction to Database Systems; Levels of abstraction, Three layer architecture. Data Independence. Schema, Structure of DBMS. Data Models - Relational Data Model and comparison with other data models</td>
</tr>
<tr>
<td>2.</td>
<td>Entity Relationship Modelling</td>
<td>E-R Model: Entities, Attributes, Entity sets, Relationships, Key constraints, Participation constraints, Weak entities, Conceptual Database Design with ER model. Schema conversion from E-R to Relational Data Model</td>
</tr>
<tr>
<td>3.</td>
<td>Relational Algebra</td>
<td>Relational Algebra: Introduction to Relational algebra, Basis relational operators, Query expressions using operators, Query writing using sample database.</td>
</tr>
<tr>
<td>4.</td>
<td>Relational Calculus</td>
<td>Tuple relational calculus, Domain relational calculus, Basics of QUEL and Query By Example (OBE), Safe domain relational calculus, Query writing using sample database.</td>
</tr>
<tr>
<td>5.</td>
<td>SQL - Part I</td>
<td>Basic SQL query, Basic SQL operators, Nested Queries, Aggregate Operators, Embedded SQL, Cursors, Dynamic SQL, ODBC and JDBC, Triggers.</td>
</tr>
<tr>
<td>9.</td>
<td>Database Administration (Industry)</td>
<td>Functions of Database Administration, Roles, managing data security, back up databases, controlling concurrent access, data quality management, tuning of database performance</td>
</tr>
<tr>
<td>10.</td>
<td>Pedagogy, Soft Skills &amp; Demo Teaching by Participants</td>
<td></td>
</tr>
</tbody>
</table>
### Course 6: Introduction to Data Structures and Programming in C

(Offered during 1st - 10th July, 2017)

**Participating Academies and Local Coordinator Details**

<table>
<thead>
<tr>
<th>Academy</th>
<th>Local Coordinator</th>
</tr>
</thead>
<tbody>
<tr>
<td>IIITDM Jabalpur</td>
<td>Prof. Aparajita Ojha</td>
</tr>
<tr>
<td>IIT Guwahati</td>
<td>Dr. Santosh Biswas</td>
</tr>
<tr>
<td>MNIT Jaipur</td>
<td>Dr. Emmanuel S. Pilli</td>
</tr>
<tr>
<td>NIT Patna</td>
<td>Dr. Prabhat Kumar</td>
</tr>
<tr>
<td>IIT Roorkee</td>
<td>Dr. Sudip Roy</td>
</tr>
<tr>
<td>NIT Warangal</td>
<td>Dr. R. R. Rout</td>
</tr>
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</table>

### Module details of Introduction to Data Structures and Programming in C:

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Module Name</th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td><strong>Fundamental Concepts of Programming</strong></td>
<td>Introduction to digital computers, Revision of C language fundamentals with some tricky examples and implementations. Dynamic memory allocation, pointers, structures, unions, pointer and array, pointer to pointer, pointer to structure, pointers and functions, Header files and libraries, writing and using Makefile. Programming will be in Linux environment where program editors like vim and emacs along with compilers like gcc, g++ will be used. gdb, valgrind will be used to demonstrate program debugging.</td>
</tr>
<tr>
<td>2.</td>
<td><strong>Data Structures and Implementation of Algorithms</strong></td>
<td>Basics of algorithm design techniques, time and space complexity analysis, asymptotic notations, recursion versus iteration. Linear and non-linear data structures, arrays, sparse matrices, linked list. Sorting and searching algorithms: insertion sort, selection sort, quicksort, merge sort, counting sort, sequential and binary search.</td>
</tr>
<tr>
<td>3.</td>
<td><strong>Basic Concepts of Data Structures</strong></td>
<td>Basic data structures: stack, queue, binary search trees, tree traversals, balanced search trees: AVL tree, application of binary tree, Heap and priority queue, Heap sort. Strings, common functions in string.</td>
</tr>
<tr>
<td>4.</td>
<td><strong>Abstract Data Types, Hashing and File Structures</strong></td>
<td>Sets, sequences, maps, union-find, graph, digraph, Graph traversals, Shortest path, n-ary trees, B-trees, B+ trees, splay trees. Hashing, hashing functions, hash tables, collision resolution techniques, separate chaining, open addressing, rehashing, extensible hash tables, directory structures, hash tables in the standard library. File structures, sequential and direct access, relative files, indexed files, B+ tree as index, multi-indexed files, inverted files, hashed files.</td>
</tr>
<tr>
<td>5.</td>
<td><strong>Pedagogy, Soft skills &amp; Demo Teaching by Participants</strong></td>
<td></td>
</tr>
</tbody>
</table>

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<table>
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<tr>
<th>Academy Name</th>
<th>States to Which Catering</th>
<th>Chair/Chief Coordinator</th>
<th>Contact Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronics &amp; ICT Academy at NIT Warangal</td>
<td>Telangana, Andhra Pradesh, Karnataka, Puducherry, Andaman and Nicobar Islands, Goa</td>
<td>Prof. D.V.L.N. Somayajulu</td>
<td>Email: <a href="mailto:soma@nitw.ac.in">soma@nitw.ac.in</a> <a href="mailto:eict.nitw@gmail.com">eict.nitw@gmail.com</a> M: 09849336547 Website: <a href="http://nitw.ac.in/eict/">http://nitw.ac.in/eict/</a></td>
</tr>
<tr>
<td>Electronics &amp; ICT Academy at IIT Guwahati</td>
<td>Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Tripura, Sikkim</td>
<td>Prof. Ratnajit Bhattocharjee</td>
<td>Email: <a href="mailto:ratnajit@iitg.ernet.in">ratnajit@iitg.ernet.in</a> M: 09954498116 Website: <a href="https://www.iitg.ernet.in/eictacad/">https://www.iitg.ernet.in/eictacad/</a></td>
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<tr>
<td>Electronics &amp; ICT Academy at IIITDM Jabalpur</td>
<td>Madhya Pradesh, Chhattisgarh, Maharashtra</td>
<td>Prof. Aparajita Ojha</td>
<td>Email: <a href="mailto:aojha@iiitdmj.ac.in">aojha@iiitdmj.ac.in</a> M: +919425800334 Website: <a href="http://ict.iiitdmj.ac.in/">http://ict.iiitdmj.ac.in/</a></td>
</tr>
<tr>
<td>Electronics &amp; ICT Academy at NIT Patna</td>
<td>Bihar, Jharkhand, Odisha, West Bengal</td>
<td>Dr. Bharat Gupta</td>
<td>Email: <a href="mailto:bharat@nitp.ac.in">bharat@nitp.ac.in</a> M: 09331406964 Website: <a href="http://www.nitp.ac.in/ict">www.nitp.ac.in/ict</a></td>
</tr>
<tr>
<td>Electronics &amp; ICT Academy at IIT Roorkee</td>
<td>Jammu and Kashmir, Himachal Pradesh and Uttarakhand</td>
<td>Dr. Sanjeev Manhas</td>
<td>Email: <a href="mailto:smanhas333@gmail.com">smanhas333@gmail.com</a> <a href="mailto:samanfext@iitr.ac.in">samanfext@iitr.ac.in</a> Website: <a href="http://eict.iitr.ac.in/">http://eict.iitr.ac.in/</a></td>
</tr>
<tr>
<td>Electronics &amp; ICT Academy at Malaviya National Institute of Technology Jaipur</td>
<td>Rajasthan, Gujarat, Dadra &amp; Nagar Haveli, Daman &amp; Diu</td>
<td>Prof. Vineet Sahula</td>
<td>Email: <a href="mailto:vsahula.eee@mnit.ac.in">vsahula.eee@mnit.ac.in</a> M: 954 9554 227 Website: <a href="http://www.mnit.ac.in">www.mnit.ac.in</a></td>
</tr>
</tbody>
</table>
**E&ICT ACADEMY**

**APPLICATION FORM FOR SUMMER COURSES (May - July 2017)**

**Faculty Development Programmes**
- Fundamentals of Analog and Digital Communication System
- Fundamentals of Computer Networks and Security
- Digital VLSI Circuit Design
- Introduction to Web Development
- Fundamentals of Databases
- Introduction to Data Structures and Programming in C

**Place of the academy to which participant is attending:**

<table>
<thead>
<tr>
<th>Name of the Electronics &amp; ICT Academy</th>
<th>Tick only one as applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronics and ICT Academy at IIITDM Jabalpur</td>
<td></td>
</tr>
<tr>
<td>Electronics and ICT Academy at NIT Warangal</td>
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</tr>
<tr>
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</tr>
<tr>
<td>Electronics and ICT Academy at IIT Guwahati</td>
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<tr>
<td>Electronics and ICT Academy at MNIT Jaipur</td>
<td></td>
</tr>
<tr>
<td>Electronics and ICT Academy at IIT Roorkee</td>
<td></td>
</tr>
</tbody>
</table>

**Specify the stream to which you belong to:** Faculty / Industry Professional

**Name of the Applicant:** ....................................................... (in Block letters)

**Designation:** ............................................................................

**Name of the Institution along with address to which the candidate belongs to:**

<table>
<thead>
<tr>
<th>Address</th>
<th>Telephone No</th>
</tr>
</thead>
<tbody>
<tr>
<td>.................................................................</td>
<td>.................................................................</td>
</tr>
</tbody>
</table>

**Father's Name:** ........................................................................

**Gender:** Male / Female

**Date of birth and Age:** ..........................................................

**E-mail address:** .................................................................

**Mobile No:** .................................................................
12. Do you belong to SC / ST: Yes / No (If Yes, attach photo copy of the proof)

13. Payment Mode:  
   (Please tick the appropriate one)  
   Demand Draft  
   On-line Transfer

14. If Demand Draft  
   Amount:  
   Demand Draft Number:  
   Drawn in favour of:

15. If On-line Transfer  
   Amount:  
   NEFT/UTR No.:  
   Bank Name:  
   Date of Payment:

16. Address for Correspondence:

17. Educational Qualifications with specialization:

18. Subjects taught so far:

19. No. of refresher courses / workshops attended:

20. Experience (in years):  
   Teaching: ............  
   Research: ............  
   Industry: ............

21. Accommodation required: Yes / No

---

**DECLARATION**

The information provided is true to the best of my knowledge and belief. If selected, I agree to abide by the rules and regulations of the FDP and shall attend the course for the entire duration. I also undertake the responsibility to inform the Coordinator in case, I am unable to attend the course.

Place:  
Date:  
Signature of the Applicant

---

**SPONSORSHIP CERTIFICATE**

Mr. / Ms. ..................................................  
is an employee of our Institute/Organization and is hereby sponsored to participate in the FDP conducted by Electronics & ICT Academy.

Place:  
Date:  
Signature of Head of Institution  
(with seal)

---

Supported by  
Ministry of Electronics & Information Technology (MeitY)  
Govt. of India