



Indian Institute of Technology Indore
Discipline of Electrical Engineering
Organizes
TEQIP-III Sponsored
Online Short-Term Course
on
5G and Beyond Wireless
Technologies: Modelling and
Simulations using MATLAB
(21 – 23 December 2020)



About IIT Indore



भारतीय प्रौद्योगिकी संस्थान इन्दौर में आपका स्वागत है

IIT Indore is located in Indore which takes pride of being the cleanest city in India. It was established in 2009 with motto of 'ज्ञानम सर्वजनहिताय (Knowledge is for the well-being of everyone)'. It belongs to IIT family which is known to provide best education in Engineering and Technology across India. IIT Indore has shown relentless effort in providing best platform for education as well as research in several areas of science and technology. In Times Higher Education World University Rankings 2020, IIT Indore is ranked at 351-400 among global universities, 64th among young universities, 55th among Asian universities, and 3rd among India universities. Recently, IIT Indore is ranked 10th and 23rd in the National Institutional Ranking Framework (NIRF) rankings 2020 released by Ministry of Human Resource Development (Now Ministry of Education), Government of India, under Engineering and Overall categories, respectively.



Course Features

- Online lectures from Distinguished Speakers
- E-certificate to the participants on successful completion of the course
- Course Presentations and MATLAB codes will be provided to the participants

Registration Fee

- Faculty members from TEQIP-III institutes: **NIL**
- Student participants: **Rs 1500**
- Faculty members from non-TEQIP-III institutes: **Rs 3000**
- Participants from Industry: **Rs 6000**
- Course fee includes all course materials

Course Timings 10:00 AM – 05:30 PM	Last Date of Registration
Mode of Teaching Google Meet	20 Dec. 2020

Registration Procedure

- Fill the registration form (as attached with the brochure) as well as register online using the following link : [Registration Link](#)
- Pay the registration fee (if required)
- Send the filled registration form and proof of payment to the following email ID on or before 20th Dec. 2020: <swamiramabadran@iiti.ac.in>

Number of Seats

- **Unlimited for TEQIP-III sponsored faculties**
- **Limited for other participants**

Mode of Payment:

Online payment: [E-payment IIT Indore](#)

Bank Transfer:

Beneficiary Name: Registrar IIT Indore

Account number: 1476101027440

Bank name: Canara Bank

Branch: IIT Indore, Khandwa Road, Indore

IFSC Code: CNRB0006223

Brief description about the course

Exponentially increasing wireless multimedia devices during the last decade require a high volume of data, ultra-high bandwidth and high data rate connectivity. The upcoming 5th generation (5G) wireless communication standard will be capable of providing the high data rate, low latency and substantial throughput requirements. However, it is indeed a great challenge to fulfil the very high data rate requirement of 5G and beyond (5G&B) wireless communication systems. Moreover, the radio frequency (RF) wireless communication is currently facing sparse spectrum resources and the demand for RF spectrum is also increasing with the growing popularity of new wireless devices and new applications such as smart city, high-speed backhaul networks, etc. Thus, the time has come to consider different possible physical layer (PHY) techniques for efficient design of 5G&B wireless systems, which can cater the needs of data heavy wireless devices.

Course Contents

1. 5G Communications Specifications and Use cases
2. 5G Communications & Beyond: Overview of PHY techniques
3. Channel Coding in 5G Communications
4. Modelling, Simulations, and Analysis of following 5G and beyond wireless systems will be discussed with greater details: (a) Cooperative Relay Systems (b) Energy-Harvesting-based Cognitive Radio Systems (c) Spatial-Modulation-based MIMO Systems (d) Optical Wireless Communication Systems (e) Non-Orthogonal Multiple Access (NOMA)-based Wireless Systems
5. Hands-on training session using MATLAB and demonstration of 5G waveforms through simulations

Target Audience

- UG and PG students of Electrical/Electronics and Communication Engineering
- PhD students with expertise in Communication systems, Wireless Communications, Communication Networks, etc.
- Faculty members and Industry experts from the above mentioned research areas.

Address for Correspondence:

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Course Instructors:

1. [Dr. Swaminathan R](#), IIT Indore
2. [Dr. Prabhat Kumar Upadhyay](#), IIT Indore
3. [Prof. Vimal Bhatia](#), IIT Indore
4. [Dr. M. D. Selvaraj](#), IIITD&M Chennai
5. [Dr. P. Maheswaran](#), NIT Trichy
6. [Dr. A. Ananth](#), University of Saskatchewan, Canada
7. [Dr. Prabhu Chandhar](#), Director, Chandhar Research Labs Pvt. Ltd.

Registration Form

(Please fill and send through e-mail)

Name: _____

Designation: _____

Institution/Organization: _____

Address: _____

Are you a faculty member from TEQIP Institute?
(Yes or No) _____

E-mail ID: _____

Phone/Mobile No.: _____

Payment details (for participants from non-TEQIP institutes)

Bank Name: _____

Reference ID: _____

Amount transferred: _____

Date of transaction: _____

Any other relevant information: _____

Signature of the applicant with date