

Microwave Photonics

Overview

Microwave photonics explores the rich interaction between light waves and microwaves and seek to exploit this interaction to design devices, subsystems, systems and networks that supports easy transition between microwave and optical domains. Broadband wireless systems, radars, astronomy, space and electronic warfare are some application areas. The course will begin with an exposure to the basics of light wave-microwave interactions, the working of the building blocks of microwave devices and systems, an in-depth discussion of key performance metrics. Using the transport of microwave signals over an optical fiber using a radio-over-fiber link as an example of microwave photonic system, it will discuss the system performance issues and technologies to mitigate such impairments. System architectures for antenna remoting, filtering, photonic mixing and photonic beam forming will be outlined. Application of such systems towards wireless front hauling and backhauling and for converged network architecture for 5G mobile networks would be discussed. The utility of RoF with detailed overview of different approaches, the corresponding system and subsystem technologies would be explained.

Dates for the Course	16th - 25th February 2017
Host Institute	IIT Madras
No. of Credits	2
Maximum No. of Participants	40
You Should Attend If...	<ul style="list-style-type: none">▪ You are an engineer working in the area of optical communication/network in industry▪ You are a masters/research student wishing to pursue research in the area of optical communication or allied areas▪ You are a faculty in an academic institution teaching/wishing to pursue research in the area of optical communication or allied areas
Course Registration Fees	The participation fees for taking the course is as follows: Student Participants: Rs.2000 Faculty Participants: Rs.6000 Government Research Organization Participants: Rs.10,000 Industry Participants: Rs.20,000 PI register at http://www.gian.iitkgp.ac.in/ The above fee is towards participation in the course, the course material, and computer use for tutorials and assignments. The participants may be provided with hostel accommodation, depending on the availability, on payment basis.

Course Faculty



Prof Thas Nirmalathas is the Director of Melbourne Networked Society Institute. He also provides the academic leadership to the Melbourne Accelerator Programs (MAP) which he co-founded to support entrepreneurial activities of the University Community through business acceleration models. He held many leadership positions including the Head of Department of Electrical and Electronic Engineering at the University of Melbourne. His research interests include microwave photonics, optical-wireless network integration, optical wireless networks, broadband networks, and scalability of telecom and Internet services including the Internet of Things. He has been invited to be a Visiting Professor as part of the Government of India's GIAN initiative in 2017.



Deepa Venkitesh is an Associate Professor in the Department of Electrical Engineering, Indian Institute of Technology Madras Chennai. Her research interests include nonlinear optics, optical signal processing and fiber lasers.



Harishankar Ramachandran is a Professor in the Electrical Engineering Department, Indian Institute of Technology Madras. He works in the areas of Computational Electromagnetics and optics, quantum statistics of optical links, plasma physics and antennas and satellite design.

Course Coordinators

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