A Short Course on "CommSense Integrated Sensing and Communication (ISAC) and Applications"

From 3rd February to 7th February 2026

Course Overview

You are invited to attend a short course on the pertinent and timely topic of Integrated Sensing and Communication (ISAC) and applications. This intensive **4.5 day** course introduces the principles and practise of **Integrated Sensing and Communication (ISAC/JCAS)**, from radar and radio sensing fundamentals to 5G/6G-era applications. It is designed for participants who want to go beyond theory and work hand-on with real signals, SDRs, and practical use cases such as occupancy detection, smart mobility, and activity sensing behind walls.

Short Course on ISAC is ideal for :

- **PhD students and postdocs** in wireless communication, radar, signal processing and AI who wish to position their research in ISAC/JCAS and 6G.
- **Industry engineers** (RF, DSP, embedded, test and system engineers) who need to prototype and evaluate ISAC concepts using SDR platforms and real-world channels.
- **Academic staff** planning to develop new MSc courses or QIP modules in integrated sensing, wireless sensing, SDR, or 6G communication systems.
- **Defence, space and telecom technologists** who already understand radios or radar and now want to apply CommSense-style sensing in operational systems.

Course Pre-requisite: Participants should be comfortable with basic wireless comms and signal processing; deep prior ISAC knowledge is not required.

Benefits from this course

By end of the course, participants will :

- Understand principles of radar and radio sensing, and how they integrate with modern cellular/OFDM systems in ISAC.
- Be able to design simple **ISAC processing chains,** including channel estimation, equalisation, and sensing feature extraction.
- Analyse and compare **resolution and performance** metrics for different ISAC configurations and waveforms.
- Understand **application** in occupancy sensing, smart mobility, activity detection behind walls, and other emerging ISAC use cases.

Course Coordinator and Instructor

Prof. Vimal Bhatia,
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Scan QR Code to Register

Registration Fees (incl GST):
Students of IIT Indore : Free
Students outside IITI : ₹ 2,000/-
Faculties and Industrial personnel outside IITI : ₹ 4,000/-
Last date for registration is 2nd February 2026 and acceptance are on first-come-first basis.

Course Instructors

Dr. Amit K. Mishra,
Director, NSC,
Aberystwyth University, UK

Dr. Kuntal Deka,
IIT Guwahati, India

Prof. Zafar Ali Khan
IIT Hyderabad, India

Registration link
Register at: https://forms.gle/HLja5yPiHH28aZheA or scan QR code.
For more information, please contact at: vbhatia@iiti.ac.in
Website: https://sites.google.com/view/signalsoftware/sasg/

शिक्षा मंत्रालय
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SPARC
Scheme for Promotion of Academic and Research Collaboration

1872 PRIFYSGOL ABERYSTWYTH UNIVERSITY

Four Day Short Course on

CommSense Integrated Sensing and Communication (ISAC) and Applications

From : 3rd February to 7th February 2026
Venue : POD 1A 319 EE Seminar Hall, IIT Indore or Online

Daily Schedule

Date	Time	Topics
3rd February	9:30 am - 12:30 am	1. Course Inauguration 2. Basics of radar and radio sensing 3. Basics of radar signal processing 4. Range Doppler resolution
	1:30 pm - 4:30 pm	1. Introduction to Google Colab to code 2. Simulation exercise on radar range equation 3. Simulation exercise on range-Doppler ambiguity
4th February	9:30 am - 3:30 pm	Workshop on ISAC for defence and space
5th February	9:30 am - 12:30 am	1. Principles of Channel Equalisation and CommSense ISAC 2. Waveform Diversity for ISAC 3. Resolution for CommSense ISAC 4. Implementation of CommSense ISAC using SDR 5. Radar pulse compression and use of various waveforms like LFM and OFDM
	1:30 pm - 4:30 pm	1. Simulation exercise on OFDM waveform design 2. Simulation exercise on OFDM for radar
6th February	9:30 am - 12:30 am	1. CommSense ISAC using GSM, LTE, 5GT and 6G: Results and Challenges 2. Applications of CommSense ISAC in Detecting Occupancy 3. Applications of CommSense ISAC in Smart Mobility 4. Applications of CommSense ISAC in Detecting Activity Behind the wall
	1:30 pm - 4:30 pm	1. Other Potential Applications of CommSense ISAC 2. Discussion of three review projects on new ISAC concepts
7th February	9:30 am - 12:30 am	Presentation of students on their group projects

Key Features

- Hybrid format: In-person + live virtual attendance for wider participation across defence and space stakeholders.
- Expert talks: Focused sessions on standards, defence use-cases, and space domain applications.
- Plenary discussion session: Extended, facilitated forum on challenges, opportunities, and collaboration across defence, space, and telecom sectors.
- Panel discussions: Defence SME, academic experts, military technologists, and (where possible) space/SSA representatives.
- Registration Fees: To be confirmed (with options for in-person and virtual, plus discounts for students and groups).
- Capacity: 80 in-person, 200 virtual to keep discussions interactive while allowing broad engagement.