NAHEP
THE WORLD BANK

National Agricultural Higher Education Project
CENTRE OF EXCELLENCE FOR DIGITAL FARMING SOLUTIONS FOR ENHANCING PRODUCTIVITY BY ROBOTS, DRONES AND AGVS
Indian Institute of Technology Kharagpur, Kharagpur -721302, West Bengal, India
ICAR

Two Weeks Online Short-Term Course to NAHEP-CAAST-VNMKV Students on

Application of Digital Technologies in Agriculture

Under Centre of Excellence for Digital Farming Solutions for Enhancing Productivity by Robots, Drones and AGVs (DFA) Project, NAHEP-CAAST, ICAR, New Delhi

13-24 July 2020

About NAHEP-CAAST Project

Centres for Advanced Agricultural Sciences and Technology (CAAST) under Wold Bank Sponsored National Agricultural Higher Education Project (NAHEP) of Indian Council of Agricultural Research (ICAR), New Delhi is paramount to develop and adopt the knowledge-intensive agriculture education to enhance the agricultural productivity. Agricultural Post-Graduates and Doctoral students are the target objectives to develop the quality human resource in digital technology with appropriately equipped by knowledge and their expertise in frontier areas of agricultural science and technology. The desired traits and skills could be instrumental for market-driven research and rapid adoption of advanced agricultural practices. Moreover, emphasis is being placed upon inclusiveness and equity aspects of the access to agricultural higher education. The project envisages the enhancement of quality and relevance of the agricultural higher education to the agricultural university students. The NAHEP centre is integrated by three interdisciplinary research divisions such as Agribots, Agri-Drones and Agri-AGV's based on four portfolios:

1. Climate-based Digital Knowledge Support Centre. (CDKS)
2. Seed/Seedling Processing and Nursery Automation Centre. (SSPN)
3. Smart Portable Machinery Centre. (SPM)
4. Food Processing Automation Centre. (FPA)

Project Partners

1. NAHEP-CAAST-IIT Kharagpur, Indian Institute of Technology Kharagpur, Kharagpur-721302, West Bengal, India (Knowledge Centre).

Aim of the centre is to conduct the research in the area of Agri-Robots, Agri-Drones and Agri-AGVs and to train the PG, Ph. D. and Faculty members of NAHEP-CAAST-VNMKV.

Principal Investigator:	**Prof. V. K. Tewari, Director-IIT Kharagpur and Professor, AgFE, IIT Kharagpur**
Joint-Principal Investigator:	**Dr. R. Machavaram, Assistant Professor, AgFE, IIT Kharagpur**
Co-Principal Investigator:	**Prof. T.K. Bhattacharyya, Professor, E&ECE, IIT Kharagpur**
Co-Principal Investigator:	**Dr. N.K. Peyada, Assistant Professor, AE, IIT Kharagpur**
Co-Principal Investigator:	**Prof. A.K. Deb, Associate Professor, EE, IIT Kharagpur**
Co-Principal Investigator:	**Prof. M. Bhattacharya, Professor, ICT, ABV IIITM Gwalior**

2. NAHEP-CAAST-VNMKV, Vasantrao Naik Marathwad Krishi Vidyapeeth, Parbhani-431402, Maharashtra, India (Centre of Excellence).

Aim of the centre is to establish the advanced academic and research facilities, to establish University and Industry Interface in the area of Agri-Robots, Agri-Drones and Agri-AGVs keeping IIT Kharagpur as one of the knowledge Partner.

Principal Investigator:	**Dr. G.U. Shinde, Team Leader and Assistant Professor, FMPE, VNMKV, Parbhani**
Co-Principal Investigator:	**Dr. U.M. Khodke, Associate Dean and Principal, IDE, VNMKV, Parbhani**

About the Short-Term Course

The two-weeks online short-term course on "**Application of Digital Technologies in Agriculture**" is organized under the project "Centre of Excellence for Digital Farming Solutions for Enhancing Productivity by Robots, Drones and AGVs" under National Agricultural Higher Education Project (NAHEP) sponsored by NAHEP-CAAST, ICAR New Delhi, headed by Prof. V. K. Tewari, Director-IIT Kharagpur and PI-NAHEP-CAAST-IIT Kharagpur. This short-term course aims to enlighten the participants in the areas of Sensors, Drones, Robots, Artificial Intelligence and Machine Learning, Machine Vision Techniques, Computer Aided Design and Advanced Digital Technologies application in Agriculture for enhancing the productivity with minimal effort and cost.

PG/Ph.D. Students, Faculties, Scientists of Vasantarao Marathwada Krishi Vidyapeeth, Parbhani are eligible to register and are requested to take the advantage of the two weeks online short-term course from 13th July 2020 to 24th July 2020.

Interested candidates can contact Er. D. V. Patil, Assistant Professor, FMPE and Co-Team Member of NAHEP-CAAST-VNMKV, Parbhani to register their names at e-mail: nahep.caast.vnmkv@gmail.com. Daily lectures as per the schedule are live telecasted through online platform with tutorials and online discussions by the renowned professors in the domain area from T10KT Centre, IIT Kharagpur.

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Short-Term Course Schedule

S. No.	Date	Time	Resource Person	Topic
I	13-07-2020 (Monday)	10:00 AM to 10:25 AM	NAHEP-CAAST-IIT Kharagpur Team	Online-Inauguration of the Short-term Course
1	13-07-2020 (Monday)	10:30 AM to 12:00 Noon	Prof. T.K. Bhattacharyya, E&ECE, IIT KGP	Basics of Sensors
2		02:30 PM to 04:00 PM	Prof. T.K. Bhattacharyya, E&ECE, IIT KGP	Fundamentals of Sensor Development
3	14-07-2020 (Tuesday)	10:30 AM to 12:00 Noon	Prof. M. Bhattacharya, ICT, ABV IIITM Gwalior	Image Processing Basics
4		02:30 PM to 04:00 PM	Prof. M. Bhattacharya, ICT, ABV IIITM Gwalior	Digital Image Processing Applications in Agriculture
5	15-07-2020 (Wednesday)	10:30 AM to 12:00 Noon	Prof. T.K. Bhattacharyya, E&ECE, IIT KGP	Application of Sensors for Crop and Machine Parameters
6		02:30 PM to 04:00 PM	Prof. T.K. Bhattacharyya, E&ECE, IIT KGP	Wireless Integrated Microsystems for Digital Farming Solutions
7	16-07-2020 (Thursday)	10:30 AM to 12:00 Noon	Prof. M. Bhattacharya, ICT, ABV IIITM Gwalior	Computer Aided System for Detection of Crop Parameters
8		02:30 PM to 04:00 PM	Prof. M. Bhattacharya, ICT, ABV IIITM Gwalior	Machine Vision Applications in Agriculture
9	17-07-2020 (Friday)	10:30 AM to 12:00 Noon	Prof. Raja Datta, E&ECE, Head GSST, IIT KGP	5G Technology and Its Possible Applications in Agriculture
10		02:30 PM to 04:00 PM	Prof. A.K. Deb, EE, IIT KGP	Robotics - Basics
11	20-07-2020 (Monday)	10:30 AM to 12:00 Noon	Prof. Sudeshna Sarkar, CSE, Head AI, IIT KGP	Artificial Intellgience and Machine Learning Applications in Agriculture
12		02:30 PM to 04:00 PM	Prof. A.K. Deb, EE, IIT KGP	Agri-Robots and Their Application
13	21-07-2020 (Tuesday)	10:30 AM to 12:00 Noon	Dr. N.K. Peyada, AE, IIT KGP	Unmanned Aerial Vehicles - Basics
14		02:30 PM to 04:00 PM	Prof. A.K. Deb, EE, IIT KGP	General Optmization Techniques
15	22-07-2020 (Wednesday)	10:30 AM to 12:00 Noon	Dr. N.K. Peyada, AE, IIT KGP	Application of Done based Technologies in Agriculture
16		02:30 PM to 04:00 PM	Dr. N.K. Peyada, AE, IIT KGP	Optimization Tools for Process Optimization of Agricultural Problems
17	23-07-2020 (Thursday)	10:30 AM to 12:00 Noon	Dr. R. Machavaram, AGFE, IIT KGP	Computer Aided Design using SolidWorks - Basics
18		02:30 PM to 04:00 PM	Dr. R. Machavaram, AGFE, IIT KGP	Computer Aided Design using SolidWorks - Part Modelling of an Agri-Implement
19	24-07-2020 (Friday)	10:30 AM to 12:00 Noon	Dr. R. Machavaram, AGFE, IIT KGP	Computer Aided Design using SolidWorks - Assembly and Drawing Creation for an Agri-Implement
20		02:30 PM to 04:00 PM	Dr. R. Machavaram, AGFE, IIT KGP	Static Stress Analysis using SolidWorks for an Agri-Implement
V	24-07-2020 (Friday)	4:30 PM to 5:00 PM	NAHEP-CAAST-IIT Kharagpur Team	Online-Valedictory Function of the Short-term Course