



**3-DAY WORKSHOP ON**



# **MIGRATION, NAVIGATION and BIO-MIMICKING AERIAL VEHICLES (BMAV-18)**

**(Course Code: NERTU/SC/71)  
(THU-SAT, 01-03, NOVEMBER 2018)**



**Sponsored by  
TEQIP – III, IST, JNTUH**

**Organized by  
Centre for Biotechnology, Institute of Science  
and Technology, JNTUH, Hyderabad**

**Technical Collaboration with**

**Research and Training Unit for Navigational  
Electronics, Osmania University, Hyderabad  
IEEE Hyderabad Section**

**Venue : CBT, IST JNTUH  
Time : 09.30AM – 05.30PM**

## **About Host Organization**

Jawaharlal Nehru Technology University Hyderabad, situated at Kukatpally, Hyderabad was established in 1972. The Institute of Science & Technology (IST), a constituent unit of JNTUH is presently offering Post graduate programmes in interdisciplinary areas of Science & Technology. Some of the areas include Biotechnology, Chemical Engineering, Environment, Geospatial Technologies, Nanotechnology, Pharmacy and Water resources. The Centre for Biotechnology (CBT) was established in 1989 with the aim of generating well trained manpower in different areas of Biotechnology to cater to the needs of industry and research. The faculty members of the centre are actively involved in teaching and research. Some of the areas of research at the centre include Secondary Metabolite production, Cancer Biology, Biofuels and Microbial enzymes. CBT has executed 22 sponsored and consultancy projects funded by MNRE, UGC, AICTE, TEQIP-II & III, DBT, INDO-US- IUUSTF and HPCL. It has conducted nearly sixty workshop/conferences on topics related to Biotechnology.

## **About NERTU, OU**

The Research and Training Unit for Navigational Electronics (NERTU) is established in 1982. It is the focal point for research and training in the areas of Electronic Navigation in India. It is the first University centre to work in the area of Global Positioning System (GPS) and GPS Aided Geo Augmented Navigation (GAGAN) System. Since its inception, NERTU has been conducting almost one or two short term courses per year in the area of GNSS, since 1992. Scientists, engineers, academicians and research scholars from many organizations have participated and benefited from these courses. There was very good participation in the GNSS -14, 15, 16 and 17, from many Industry, R&D academic institutes spread throughout India. NERTU has successfully executed 60 sponsored and consultancy projects funded by DRDO, ISRO, DST, MIT, ECIL, HAL, BEL, AICTE and ASL. It has also conducted 65 short term courses/workshops/conferences on various topics of signal processing, communications and navigation.

## **About The Course**

Migration or Long distance flight is the natural phenomena in some birds, insects and bats. Small or big birds are able to make a long distance flight in their annual cycle. Orientation and Navigation is essential for migration. They travel more than thousands of kilometers from one continent to another continent due to adverse environmental conditions at home for living. These fliers not only migrate to known far away locations, but also navigate for food in the nearby area. But the scientists and engineers are yet to understand the orientation and navigation of these fliers and adopt it in the design of bio-mimicking aerial

vehicles. This long distance flight requires abundant supply of energy which is met from carbohydrates, proteins and mostly fats oxidation. They are using this limited available energy for developing aerodynamic forces such as vertical lift against gravity and forward thrust against drag. All these natural flyers use flapping wings for developing aerodynamic forces. Landing and takeoff is another challenging problem for bio-mimicking aerial vehicles. Scientists and engineers have been working for more than two decades to mimic the natural fliers in order to develop bio-mimicking aerial vehicles with autonomous navigation and flapping flexible wings. It requires multidisciplinary expertise from biological and engineering fields. It will be a long way to develop a bio-mimicking aerial vehicle with autonomous navigation and flapping flexible wings for a long distance flight with proper landing and takeoff mechanisms as in birds. This course is open to all, who are interested to know the recent trends in this area and planning to work in this area. The course will cover the following topics with invited lectures: Navigation by Biological Flyers; Classical Navigation in Man Made flyers; Bio-mimicking / Autonomous Navigation: Case studies; Migration of Biological flyers; Migration and Energy Requirements; Bio Aerodynamics and Flapping Flexible Wings; Flappers and Flexible Wings for BMAVs; MAVs and UAVs.

The main objective of this course is to bring scientists, engineers, academicians and research scholars on one platform, to work for development of bio-mimicking aerial vehicles.

## **Faculty**

- 1. Lt. Gen.(Rtd) Dr. V. J. Sundram, Micro & Nano Systems, NDRF**
- 2. Prof. N. Chari, Biomimicking Programmes, NDRF**
- 3. Dr. Abhishek, IIT, Kanpur**
- 4. Dr. Parag Deshpande, MAV Unit, NAL**
- 5. Dr. Arjun Singh, Sakthi Aviation**
- 6. Prof. P. Laxminarayana, NERTU, OU**
- 7. Dr. A. Uma, CBT, IST, JNTUH**
- 8. Prof. KMR Acharya, MRCET**

### List of advisory committee

#### Internal

Prof. K. Subba Rao  
Prof. M. Lakshmi Narasu  
Dr. Archana Giri  
Dr. L. Saida Naik  
Dr. Ch. Kalyani  
Dr. Anjaneyulu Musini  
Dr. K. Venkateswar reddy  
Dr. P. Ranjit  
Mr. Suresh Babu

#### External

Prof. N. Chary  
Dr. Amit Kumar

#### Chief Patron

**Prof. A. Venugopal Reddy**  
Hon'ble Vice-Chancellor, J. N. T. University  
Hyderabad

#### Patrons

**Prof. A. Govardhan**  
Rector, J.N.T.University Hyderabad  
**Prof. N. Yadaiah**  
Registrar J.N.T.University Hyderabad

#### Chairperson

**Prof. B. Venkateswara Rao**  
Director, IST, JNTUH

#### Coordinators

**Dr. A. Uma**  
Head and Assistant Professor,  
IST, JNTUH  
**Prof. P. Laxminarayana,**  
Director, NERTU, OU

### Registration

Registration Fee (INR): 18%GST will be extra.  
For Full Time PG/PhD students: **Rs. 1500/-**  
Faculty members: **Rs. 1500/-**  
For Scientists and Engineers: **Rs. 3000/-**  
DD/Cheque should be drawn in favor of **Coordinator,**  
**Bio-mimicking** or online payment through NEFT to  
**Coordinator, Bio-mimicking**  
**A/C No.: 37987004918**  
**IFSC Code: SBIN0021008**  
JNTU Campus Branch State Bank of India, Kukatpally.  
**Registration Starts from 05<sup>th</sup> October 2018**  
**Last Date for Registration: 24<sup>th</sup> October 2018**

Interested candidates can download the registration form and send the filled form to the following address along with DD/Cheque, to "The Coordinator, BMAV-18, Center for Biotechnology, Institute of Science and Technology, Jawaharlal Nehru Technological University Hyderabad, 500085" or send it be email to **biotechaliya@gmail.com,** **sreenu471.ece@gmail.com**

**neru.courses@osmania.ac.in**

**Co-Coordinator, BMAV-18**

**Dr. S. Aliya,** CBT, IST, JNTUH Ph. 09885520755,  
biotechaliya@gmail.com  
**Ch.Srinu,** Research Scholar, NERTU, OU,  
Ph.09032930657, sreenu471.ece@gmail.com

**Address for correspondence**

**Dr. A.Uma,**  
**Coordinator, BMAV-18,** Assistant Professor & Head  
Centre for Biotechnology,  
Institute of Science and Technology,  
Jawaharlal Nehru Technological University Hyderabad,  
Kukatpally, Hyderabad-500 085  
E-mail: vedavathi1@jntuh.ac.in,  
Phone: 0984 812 0819 (Mobile), 23157220(R)

**Prof.P.Laxminarayana,** Director, NERTU, OU

**Co-Coordinator, BMAV-18**

E-mail: laxminarayana@osmania.ac.in  
Phone. 0949 080 5486

For schedule and other details visit <http://jntuhist.ac.in> or  
[www.osmania.ac.in](http://www.osmania.ac.in) or <http://www.uceou.edu>.

### 3-Day Workshop on

## Migration, Navigation and Bio-Mimicking Aerial Vehicles (BMAV-18)

**01-03 November 2018**

(Course Code: NERTU/SC/71)

**Organized by**

**CBT, IST, JNTUH, Hyderabad**

**Technical Collaboration with**

**Research and Training Unit for Navigational**

**Electronics, Osmania University, Hyderabad**

**IEEE Hyderabad Section**

**Sponsored by**

**TEQIP – III, IST, JNTUH**

## REGISTRATION FORM

&  
Name (Mr./Mrs./Ms./Dr./Prof): \_\_\_\_\_

Designation: \_\_\_\_\_

Full Address \_\_\_\_\_

Cell No: \_\_\_\_\_

Email id: \_\_\_\_\_

Accommodation: Required/Not Required

Registration fee details:

Amount: \_\_\_\_\_

DD No: \_\_\_\_\_

Date: \_\_\_\_\_

Bank Details: \_\_\_\_\_

Signature of the Applicant

## **3-DAY Short Workshop on Migration Navigation, and Biomimicking Aerial Vehicles**

**Centre for Biotechnology, Institute of Science and Technology, JNTUH, Hyderabad – 500085**

**In Collaboration (Technical) with**

**Research and Training Unit for Navigational Electronics, Osmania University**

**Hyderabad-500007**

### **TENTATIVE SCHEDULE**

<b>Day-1 Thu Nov. 1, 2018</b>	<b>0930-1030</b>	<b>1030-1130</b>	<b>11.30-2.00</b>	<b>1200-1300</b>	<b>13.00-14.00</b>	<b>1400-1500</b>	<b>15.00-15.30</b>	<b>1530-1630</b>	<b>1630-1730</b>
	<b>Registration &amp; Inaugural Function</b>	<b>Keynote Address</b>	<b>Tea</b>	<b>Migration of Biological flyers</b>	<b>Lunch</b>	<b>Classical Navigation in Man Made Flyers</b>	<b>Tea</b>	<b>Navigation by Biological Flyers</b>	<b>Classical Navigation in Man Made Flyers</b>
<b>Lt.Gen. (Rtd) Dr.V.J .Sundaram</b>		<b>Prof.Chary NDRF</b>		<b>Dr.Arjun Singh Sakti Aviation</b>		<b>Prof.P.Laxminarayana NERTU, OU</b>		<b>Dr.Arjun Singh Sakti Aviation</b>	

<b>Day-2 Fri Nov. 2, 2018</b>	<b>09.30-11.00</b>	<b>11.00-11.30</b>	<b>11.30-13.00</b>	<b>13.00-14.00</b>	<b>1400-1500</b>	<b>15.00-15.30</b>	<b>1530-1630</b>	<b>1630-1730</b>
	<b>Bio Aerodynamics Lift, Thrust and Stall Generation</b>	<b>Tea</b>	<b>Basics of Design and Development of UAVs and MAVs</b>		<b>Fluid-Structure Interaction in Bird-like Flexible Flapping Wing: An Experimental Study</b>	<b>Tea</b>	<b>Design and Development of UAVs and MAVs at IITK</b>	<b>UAV Design Approach and Wind Tunnel Characterization of a UAV</b>
	<b>Prof.N.Chari, NDRF</b>		<b>Dr.Abhishek, IITK</b>		<b>Dr.Parag, NAL</b>		<b>Dr.Abhishek, IITK</b>	<b>Dr.Parag NAL</b>

<b>Day-3 Sat Nov. 3, 2018</b>	<b>0930-1030</b>	<b>1030-1130</b>	<b>11.30-12.00</b>	<b>1200-1300</b>	<b>13.00-4.00</b>	<b>1400-1500</b>	<b>15.00-15.30</b>	<b>1530-1630</b>
	<b>Meeting Energy Requirements during Migration</b>	<b>Biomimicking Autonomous Navigation: Case studies</b>	<b>Tea</b>	<b>Review on mathematical Models for Wing beat Frequency of Insects</b>		<b>Presentations by PhD Research Scholars and Students</b>	<b>Tea</b>	<b>Concluding Session</b>
	<b>Dr.A.Uma CBT, JNTUH</b>	<b>P.Laxminarayana NERTU, OU</b>		<b>Dr.KMR Acharya, MRCET</b>				

**Centre for Biotechnology, Institute of Science and Technology, JNTUH,  
Hyderabad**  
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**Registration Form**

1. Name			
2. Designation/Class			
3. Organization with Address			
4. Educational Qualifications			
5. Professional Experience a. Teaching (Years) b. Research/Industry (Years)			
6. Areas of Research Interest/Working			
7. Email		Can it be shared with participants	Yes/No
8. Phone		Can it be shared with participants	Yes/No
9. Registration fee a. Amount  b. Cash/NEFT/DD/Cheque No.			

Signature of the Candidate with date

**Registration Fee (INR) : 18% GST will be extra.**

**Full Time Students : 1500/-**

**Faculty : 1500/-**

**Scientists and Engineers: 3000/-**

DD/Cheque should be drawn in favor of “**Coordinator, Bio-mimicking**”  
Or online payment through NEFT to

**Coordinator, Bio-mimicking**

A/C No.: 37987004918

IFSC Code: SBIN0021008

JNTU Campus Branch, State Bank of India, Kukatpally.

For schedule and other details visit <http://jntuh.ac.in> or <http://jntuhist.ac.in> or [www.osmania.ac.in](http://www.osmania.ac.in) or <http://www.uceou.edu>

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