

Short Term Course and Workshop on
ADAPTRONICS
(*Active Shape Control, Active Vibration Control,
Active noise Reduction and Structural Health Monitoring*)
20-23 September 2017

Jointly organized by

*Institute of Adaptronics and Functions Integration
Technical University of Braunschweig, Germany*

and

*School of Engineering
Indian Institute of Technology Mandi, Mandi (H.P.)*



Coordinators

Prof. Dr.-Ing. Michael Sinapius,
Institute of Adaptronics and Functional Integration,
Technical University of Braunschweig, Germany
and
Institute of Composite Structures and Adaptive Systems,
German Aerospace Centre (DLR), Braunschweig, GERMANY

Dr. Vishal S. Chauhan
School of Engineering,
Indian Institute of Technology Mandi, INDIA

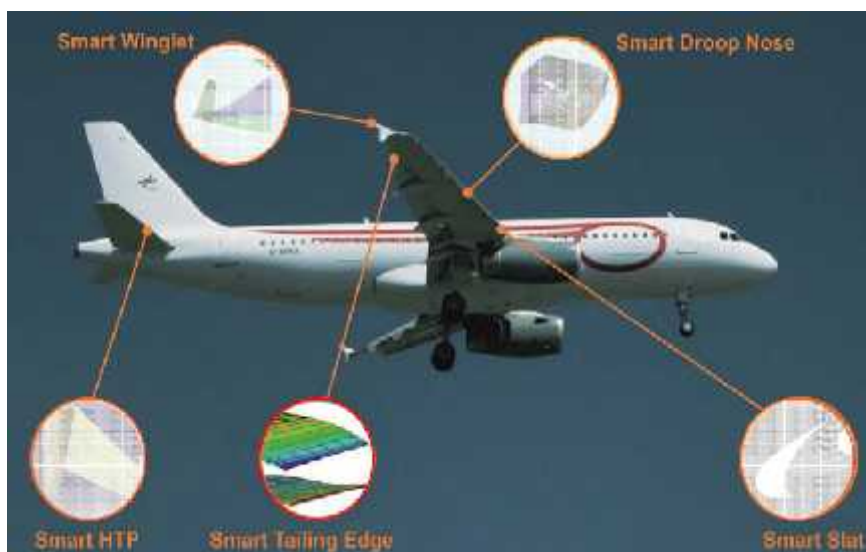
Introduction

Adaptronics is an interdisciplinary field of engineering science. This research is focused on self-adapting structures in all areas of Engineering. It primarily deals with active shape control, active vibration and noise control, and structural health monitoring. Adaptronics is the scientific discipline of the integration of functions into load-bearing structures and to achieve the system which can adapt autonomously to different ambient conditions. The course gives an introduction into the background of Adaptronics for students in Engineering.

After the short term course, basic lab sessions will be conducted to facilitate understanding of the principles of Adaptronics. The novelty of this course lies in attempting to train graduate students, young researchers and engineers with active shape control, active vibration control, active noise reduction and integrated health monitoring systems.



The course will promulgate knowledge and share experimental and current research experiences and outcomes among the engineers, manufacturers, industrialists with dedication into breakthroughs in advances and innovations in technical, civil, automobile, mechanical, aviation, nanotechnology, medical, defence and related fields.



Aircraft Morphing

Objectives

- To learn the wide range of applications of adaptronics
- To understand Adaptronics as an inter-disciplinary science and its scope

Eligibility

The course and workshop are open to Faculty Members, Students from Engineering Colleges / Polytechnics and Practicing Engineers from Industries and R&D Institutions. Seats are limited.

Short Term Course Contents (20-22 September 2017)

Lectures

- Introduction of adaptronics and their components.
- Smart materials
- Piezo ceramics
- Electro active polymers
- Structural conformity
- Shape control
- Structurally integrated health monitoring.
- Active vibration control
- Active Noise Control

Lab Sessions

- Piezoelectric effect – butterfly hysteresis
- Piezoelectric actuators - working diagram
- Shape control
- Vibration control
- Placement of actuators and observability
- Acoustic control with electric networks



Shape control of Aerofoil



Structural health monitoring

Workshop (September 23, 2017)

Workshop will be focused on introducing current research areas in Adaptronics. Eminent researchers from India and abroad will deliver lectures on their research related to adaptronics.

About the Speaker of short term course

Prof. Dr.-Ing. Michael Sinapius is the full Professor and Head of Institute of Adaptronics and Functional Integration at Technical University of Braunschweig, Germany. He is also Member of Directorate of German Aerospace Centre (DLR) at Braunschweig. His current research activities are focused on the Fibre Reinforced Plastics, Lightweight Structures, Smart Materials, Adaptive Structures, Structural Dynamics. Prof. Sinapius has published more than hundred research articles in international journals of repute.

General Information about IIT Mandi

Nestled in the Shivalik Range of the Himalayas, away from the bustle of the metropolis, a new abode of learning, IIT Mandi, has germinated in 2009. The focus of IIT Mandi is to spearhead cutting edge research and development of technologies needed by the world in the years to come. Research groups will work together in creating and harnessing the newest technologies needed to serve the people of the region and the country, and to tackle problems of global importance. In order to achieve excellence and high impact locally and globally, IIT Mandi focusing on strongly foster inter-disciplinary R&D.

How to Apply

The duly filled Registration Form along with the Registration Fees (see fee details below) should reach to the coordinator on or before August 30, 2017. Intimation of selection will be communicated to the participants by Sept. 5, 2017.

Registration Fee

Practicing Engineers: Rs. 5,000/-

Faculty Members: Rs, 3,000/-

Students: Rs. 1,500/-

Registration fee includes course material, working lunch, refreshments and accommodation (sharing basis at hostel). Fee is payable in advance by Demand Draft in favour of “The Registrar, IIT Mandi” payable at Mandi.

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**Short Term Course and Workshop on
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(Active Shape Control, Active Vibration Control,
Active noise Reduction and Structural Health Monitoring)
(20-23September 2017)**

Registration form

Name.....

Qualification

Designation.....**Experience**

Organization.....

Address.....

.....

.....

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Phone/Mobile No

E – Mail

Payment Details

Demand Draft No......

Dated.....**Drawn on**.....

Date:.....**Signature**.....