

# Optimisation and “trade-off” in Biomimetics

Workshop by Professor Julian Vincent, University of Oxford.

The **International Society of Bionic Engineering** presents this workshop to enhance understanding of biomimetics, its science and technology, and to spread the spirit, ideas and methods of the science.

**LANGUAGE:** English

**DATE:** October 10-11, 2015

**VENUE:** Key Laboratory of Bionic Engineering (Ministry of Education), Jilin University, 5988 Renmin Street, Changchun, 130022, P. R. China

**REGISTRATION FEE:**

Delegate/Participant: 500RMB

Student/ Accompanying Person: 200 RMB

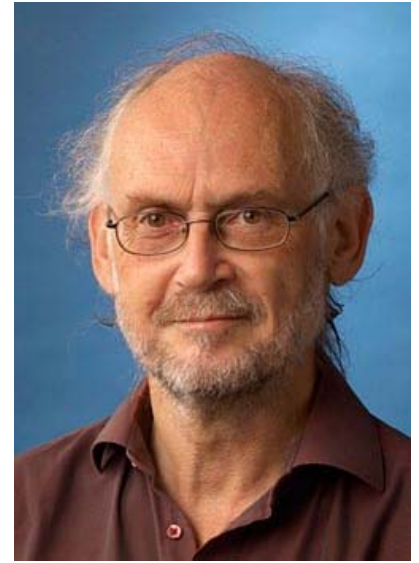
**ACCOMMODATION:**

All the participants will be accommodated at their own expense.

**REFERENCES:** Lecture notes in MS PowerPoint

**CERTIFICATE OF TRAINING:** Will be provided.

**APPLICATION DEADLINE:** September 10, 2015



**Prof. Vincent says**  
*“Learn from Nature”*

Leading you to the  
fascinating study  
of Biomimetics

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## BENEFITS OF ATTENDING

This 2-day workshop will address problems of optimisation in technology and biology. At the end of the course you will be able to analyse biology papers more readily and have learned a new approach to solving difficult problems.

In a classic design problem defined in terms of dialectic materialism, that there are two desired outcomes which are mutually exclusive. The classic solution is “optimisation” - the “least worse” solution where each outcome is not too much harmed by the other, commonly called a “trade-off”. Biology can avoid this problem by changing its control systems such that each of the outcomes can be used, but under differing circumstances.

## WORKSHOP PROGRAMME

### October 10 (Saturday) Morning

1. Introductory lecture on Biomimetics, covering basic advantages and problems in this approach to design, some good examples and some bad ones.
2. An exploration of the dialectic approach, with some theory and examples from biology.
3. Formation of Project Groups (4 people per group): Distribution of biological papers and project topics.

### October 11 (Sunday) Morning

1. Group discussion of allocated papers and their understanding.
2. Tutorials with each Project Group, discussing papers and application to project.

### October 11 (Sunday) Afternoon

Presentation of projects, course photograph and award of certificates.

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### PRESENTER: Prof. Julian F. V. Vincent

*Julian F. V. Vincent is the President of the ISBE. His primary training was in zoology, but he has also been a Professor of Mechanical Engineering. He has published over 320 papers, articles and books covering aspects of mechanical design of plants and animals, complex fracture mechanics, design of composite materials, use of natural materials in technology, advanced textiles, deployable structures in architecture and robotics, smart systems and structures. His book Structural Biomaterials is a standard text.*