



## SÛRETÉ DE FONCTIONNEMENT DES SYSTÈMES ET DES STRUCTURES

### HEALTH MONITORING

Lecturers: **Olivier BAREILLE, Michelle SALVIA**

| Lecturers : 0.0 | TC : 28.0 | PW : 0.0 | Autonomy : 0.0 | Study : 0.0 | Project : 0.0 | Language : AN

### Objectives

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In the transportation and the energy-supply industry, a rigorous and reliable maintenance strategy shall be applied. In this course, the methods of control and health-monitoring will be described. Their advantages and limitations will be addressed and discussed.

Some specific materials and technique dedicated to the structural health monitoring will be reviewed. The topic will be

**Keywords :** structures surveillance  
ageing, material damages for structures  
signal processing  
wear and damage index

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### Programme

The SHM steps  
Measurement and sensor systems  
Composite material in aeronautics : application of the SHM  
Smart materials  
Damage models and predictive models

### Learning outcomes

- establishing a monitoring strategy
- identification of damage phenoma
- data analysis and compared studies

### Independent study

**Objectifs :**

**Méthodes :** The 8 lectures are completed by 3 sequences of lab (1 experimental + 2 numerical).

### Core texts

J. Lemaître, *A COURSE ON DAMAGE MECHANICS*, Springer Verlag, New York, 1996  
Adams Douglas E. *HEALTH MONITORING OF STRUCTURAL MATERIALS AND COMPONENTS*, Wiley, 2007  
Karbhari Vistasp M. and Ansari Farhad *STRUCTURAL HEALTH MONITORING OF CIVIL INFRASTRUCTURE SYSTEMS*, Woodhead Publishing CRC Press, 2009

### Assessment

Final exam (knowledge - coeff. 0,3)  
Document analysis and practical exercises (know-how - coeff. 0,6)  
Practice (methodology - coeff. 0,1)