Lightweight Design of Aircraft Structures

24 - 28 September 2007

Hochschule für Angewandte Wissenschaften Hamburg
Hamburg University of Applied Sciences

AIM	The objective of this module is to provide specific hints for advanced work within the important area of lightweight design especially concerning aircraft structures. Certification and economic aspects are considered as well.
TARGET DELEGATES	This module is intended for graduate engineers, equivalent professionals and managers. It is assumed that the participants are generally familiar with the topics of lightweight design. It is likewise suitable for specialists in search of a broader perspective, and for junior experts in this field.
LEARNING OUTCOMES	On completion of the module delegates will be able to: • understand the design process of lightweight structures depending on various requirements in aircraft design • evaluate the properties, performance and application of typical materials • know how to solve different structural problems by appropriate analytical and numerical methods • understand the influence of structures design on reliability, safety and economics of aircrafts
LEARNING ENVIRONMENT	The module will include lectures with examples of applications, laboratory work, computer-aided work and discussions.
PRE-MODULE STUDY	Delegates will be expected to undertake preparation work using pre-course material and reference literature.
MODULE CONTENT	The module is organized in accordance with the subsequent sub-modules: • Introduction, overview to aircraft structures • Loads, design rules, materials, design methods, analytical approaches • Special Applications of the Finite Element Method: Buckling, Vibration Modes, Nonlinearities (PATRAN/NASTRAN) • Composite Materials: theory of laminates, specific effects of laminates, rules for design and fabrication • Crashworthiness: general design rules, methods of calculation (LSDYNA) • Optimization: general basics, different methods, numerical solutions • Aeroelasticity: general basics, different methods, analytical and numerical solutions
VENUE & MODULE LEADER	University of Applied Sciences Hamburg (HAW), Hamburg, Germany Module Leader: Prof. Dr.-Ing. Hans Flüh, Department of Automotive and Aircraft Engineering, Berliner Tor 9, 20099 Hamburg, Tel. +49/40/42875 - 7854 Fax +49/40/42875 - 7809, E-Mail: flueh@fzt.haw-hamburg.de
SUBMODULES & LECTURERS	Design Principles: Prof. Dr. Flüh (HAW) Structural Analysis: Prof. Dr. Dehmel (HAW) Composites: Prof. Dr. Seibel (HAW) / Dr. Herbeck (Department leader Structures-Technology, DLR) Crashworthiness: Prof. Dr. Schumacher (HAW) / Dr. Beesten (Leader Occupant Safety Simulation, Volkswagen) Numerical optimization: Prof. Dr. Schumacher (HAW) / Dr. Harzheim (Project Leader Optimization, Adam Opel AG) Aeroelasticity: Prof. Dr. Zingel (HAW)

MODULE PROGRAMME

	Monday 24 September	Tuesday 25 September	Wednesday 26 September	Thursday 27 September	Friday 28 September
8:30					
9:00	Welcome Introduction	Structural Analysis (1.5 hL)	Structural Analysis (1.5 hL)	Numerical Optimization (1.5 hL)	Numerical Optimization (1.5 hL)
10:00	Design Principles (1.5 hL)	Structural Analysis (2 hL)	Structural Analysis (1.5 hL)	Numerical Optimization (1.5 hL)	Numerical Optimization (1.5 hL)
11:00	Design Principles (1.5 hL)		Break		
12:00	Break	Break	Structural Analysis (1.5 hL)	Aeroelasticity (1.5 hL)	Aeroelasticity (1.5 hL)
13:00	Composites (1.5 hL)	Composites (1.5 hL)	Break		
14:00	Break	Break	Crashworthines (1.5 hL)	Crashworthines (1.5 hL)	Aeroelasticity Laboratory work (1 hL)
15:00	Design Principles Laboratory work (2 hL)	Composites (1.5 hL)	Break		Break
16:00		Break	Crashworthines (1.5 hL)	Crashworthines Laboratory work (1.5 hL)	Module Evaluation
17:00		Composites Laboratory work (1.5 hL)			Farewell
18:00					
19:00					

hL = hour lecturing

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COST

Module fee: € 1280.00 (+ 19% VAT) inclusive didactical material, coffee breaks and lunches (transport, accommodation and dinner are not included). The module may be cancelled if a minimum number of registrants is not reached; all fees will be refunded. Registrants who cancel before 28 August 2007 will receive full refund, no refunds given for cancellation after 28 August 2007, but substitution of a registrant is accepted at any time. After we receive your application we will send you an invoice which will also serve as confirmation of your registration.

APPLICATION & ENQUIRY FORM

☐ I wish to enrol for the Module “Lightweight Design of Aircraft Structures”

Name _____

Function _____

Organization _____

Address _____

_____

_____

Phone _____ Fax _____

E-Mail _____

Please forward this slip by 28 August 2007 to TuTech Innovation GmbH - Attn. Gerlinde Löbkens, Harburger Schlossstrasse 6-12, 21079 Hamburg, Germany. Tel: +49 40 76629 6551, Fax: +49 40 76629 6559, E-Mail: loebkens@tutech.de; http://www.LightweightDesign.tutech.de

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