



Hochschule für Angewandte Wissenschaften Hamburg
Hamburg University of Applied Sciences



Aeronautical Engineering

– Cabin / Cabin Systems

Hamburg – Centre of Competence for Cabins

Worldwide cabin customising is becoming an important factor in the civil aviation industry, as cabin design increasingly defines and determines the competitive advantage of airline carriers. Hamburg has earned international recognition in the civil aviation industry as a centre of competence for aircraft cabins and cabin systems.

AIRBUS in Hamburg has sole responsibility for the newly developed cabin interiors, including the electronics and all systems. The Completion Centre at Lufthansa Technik AG is responsible for the fitting of business and government aircraft, leading development in aircraft fittings with innovative solutions, for example, in onboard communication and in-flight entertainment.

AIRBUS Germany and Lufthansa Technik cooperate closely with small and medium-sized companies to develop modern cabin interiors and sophisticated technologies. Product innovations include coatings and textiles, lifts for large aircraft as well as digital cabin communication and management systems.

New design concepts are developed in close cooperation with universities, research institutes and end customers (airlines, transport companies). Hamburg is also the venue for the Aircraft Interiors Expo (AIE); the key event in the aircraft cabins and cabin systems sector.*



Hamburg University of Applied Sciences – Cabin & Cabin Systems

Hamburg University of Applied Sciences is the only university in Germany that offers »Cabin & Cabin Systems« as a study major in its Bachelor's and Master's programmes. Students learn about the architecture of the cabin, looking at cabin configurations, cabin monuments and components, cabin systems, human factors and cabin certification. They also study ergonomics and the design of cabins as well as new materials technology and the manufacturing of cabins.

Cabin & Cabin Systems – Modules in English

International guest students, studying Aeronautical Engineering at Bachelor's level, have the opportunity to gain an insight into this important new field. They can study the Bachelor modules »Architecture of the Aircraft Cabin« and »Mechanical Aircraft Cabin Systems« as well as complete a research project in this area in English.

These modules are offered in the summer semester (March – July 2010). The programme is a total of 16 ECTS credits with an overall workload of 510 hours.

* Source: Joint Initiative Hamburg – the place for aviation

Course Name: Architecture of the Aircraft Cabin

Degree programme:

Aeronautical Engineering (Bachelor)

Responsible Lecturer: Prof. Dr. Gordon Konieczny

Work load: 150 hours**Lecture hours per week:** 4**ECTS Credits:** 5**Course objectives:**

Students will be taught the fundamental requirements for the design and the operations of an aircraft cabin from the perspectives of different groups, e.g. passengers, carriers, regulatory authorities. They will learn about the basic criteria for the construction of an aircraft cabin and its interdependencies. In addition, they will be able to evaluate current developments and projects in the area of aircraft cabins and cabin systems.

Contents:

1. Introduction to cabin architecture
2. Cabin configurations (Technical design parameters of the aircraft cabin)
3. Human Factors (Anthropometry, Cabin operations, physiological and psychological aspects)
4. Certification of aircraft cabins (Introduction and procedures for basic certification parameters)
5. Airbus site visit – Innovative Cabins
6. Trends in aircraft cabins
7. Overview of functional cabin architecture (Requirements Based Engineering (RBE), Functional Integration, Development Processes (V-Process))
8. Cabin Monuments and components (Description of standard cabin components, detailed examination of seating, galley, toilets)

9. Cabin systems – Air conditioning (Basic elements and architecture of air supply, oxygen, water and waste water systems and integration into the cabin)
10. Cabin systems – Electrical Systems, lighting and display systems (Basic elements and architecture of the electrical cabin systems and their integration; reliability tests (MTBF, redundancies, architecture))
11. Basics of Cabin Acoustics
12. Freight systems
13. Cabin Flexibility and Reconfiguration
14. Materials and Material tests
15. Configuration Management and Module definition
16. Installation and Building Feasibility Concepts
17. Supplier Strategies and Use of Intellectual Property

About didactics and work load distribution:

interactive lectures with exercises; 72 hours classes, 78 hours personal study

Requirements for participation:

–

Course language:

English

Type of exam:

Written examination, paper

Requirements for credit point allocation:

Active participation in group work and lessons

Literature:

- Torenbeek, E.: Synthesis of Subsonic Airplane Design.
- Woodson, Wesley et al.: Human Factors Design Handbook.
- Engmann, K. et al.: Technologie des Flugzeugs, Würzburg, Vogel Buchverlag, 4. Auflage 2008.
- Schulze, E. et. al.: Flugmedizin, Berlin, transpress Verlag, 1. Auflage 1990.
- Daab, Ralf: Aircraft Interiors, Köln, fusion publishing GmbH, 1. Auflage 2005.
- Bor, Robert: Passenger Behavior, Hants, Ashgate Publishing House, 1. Auflage 2005.
- Tilley, Alvin R. : The Measure of Man and Woman, Henry Dreyfuss Associates, John Wiley & Sons, Inc. New York, revised edition, 2002.

Course Name: Mechanical Aircraft Cabin Systems

Degree programme:

Aeronautical Engineering (Bachelor)

Responsible Lecturer: Prof. Dr. Wolfgang Gleine

Work load: 120 hours**Lecture hours per week:** 4**ECTS Credits:** 4**Course objectives:**

Students are taught the technical fundamentals and functions of individual fluid mechanical aircraft cabin systems and their interdependencies with other systems and with features of the whole aircraft. They will learn about edge conditions required for system operation and system integration into an aircraft. Dependencies between system design/installation and cabin operation and cabin comfort properties (e.g. cabin acoustics, cabin ventilation) are explained in detail.

Contents:

- Air conditioning
- Cooling systems
- Water / Waste Water Systems
- Oxygen Systems

About didactics and work load distribution:

interactive lectures with exercises; 72 hours classes, 48 hours personal study

Requirements for participation:

Recommended: Knowledge of fluid mechanics, thermodynamics, electronics, measuring and controlling technologies

Course language:

English

Type of exam:

Written examination

Requirements for credit point allocation:

Active participation in group work and lessons

Literature:

Information from industry as lecture scripts from the professor

Course Name: Aeronautical Engineering Semester Research Project

Degree programme:

Aeronautical Engineering (Bachelor)

Responsible Lecturer: *

Work load: 240 hours**Lecture hours per week:** 8**ECTS Credits:** 8**Course objectives:**

Students will work independently on a constructional, experimental or theoretical project in the area of aeronautical engineering, using scientific methodology and findings.

Contents:**Instruction in the independent completion of a constructional, experimental or theoretical project****A constructional project includes:**

- The illustration of the project task
- The description of the solution
- The necessary analyses and calculations as well as their results
- A detailed presentation (written report) of the work

A constructional project also includes:

- The constructional solution

An experimental project also includes:

- The description of the experimental implementation as well as the instrumentation

A theoretical project also includes:

- The explanation of the theoretical analyses and calculations as well as the developed models

About didactics and work load distribution:

240 hours of individual study and project work. *Students will be coached by the professor responsible for the research area.

Students can choose to complete a project in one of the research areas in the department. Information about the different projects can be found under: www.haw-hamburg.de/7092.html

Requirements for participation:

Successful completion of year 1 of an undergraduate degree programme in aeronautical engineering.

Course language:

English

Type of exam:

Completion and presentation of project

Requirements for credit point allocation:

-

Literature:

-

Hamburg

In the North of Germany and in the heart of Europe – Hamburg is Germany's second largest city (1.8 million inhabitants) and offers an excellent quality of life and international flair.

City on the water

Hamburg is a city on the water. The »Alster«, a 1.6 km² large lake in the middle of the city, is the perfect place for sailing, canoeing and rowing – not just for sportspeople but also for city people who prefer a leisurely boat trip on a mild summer evening. The Elbe flows through Hamburg and connects the city and its international harbour with the world.

Dynamic city

Hamburg is one of the most dynamic commercial centres in Europe with a strategic focus on six innovative segments: aviation (Airbus, Lufthansa), IT and media, international port and logistics, life sciences, nanotechnology and renewable energies. Competence clusters interlink companies, universities and research institutes to ensure that knowledge is shared and innovative ideas developed further.



Green city

Hamburg is a green city. Numerous trees and large parks make life in this city very pleasant. Whether at the weekend or after work and whatever the weather – Hamburg citizens enjoy the parks at the »Alster«, the 140 hectare large »Stadtpark« or the flower paradise »Planten un Blumen«. Europe's »greenest« city offers a wide range of possibilities for everyone who enjoys spending time out of doors.

City of culture & nightlife

Hamburg is a city of culture. A vibrant theatre scene offers everything from big, classical productions to fringe theatre. Hamburg is famous for its ballet and is the third largest musical city after New York and London. Fifty museums offer a varied programme of exhibitions and collections. The Beatles achieved international acclaim in the Hamburg »Starclub« and today world stars are at home in the arenas and on the stages of the city. And of course, the nightlife is legendary – with the world famous »Reeperbahn« you can party til the morning light.

Applications:

Hamburg University of Applied Sciences
International Office
international@haw-hamburg.de
www.haw-hamburg.de/studyabroad

Application deadline: 30 October 2009