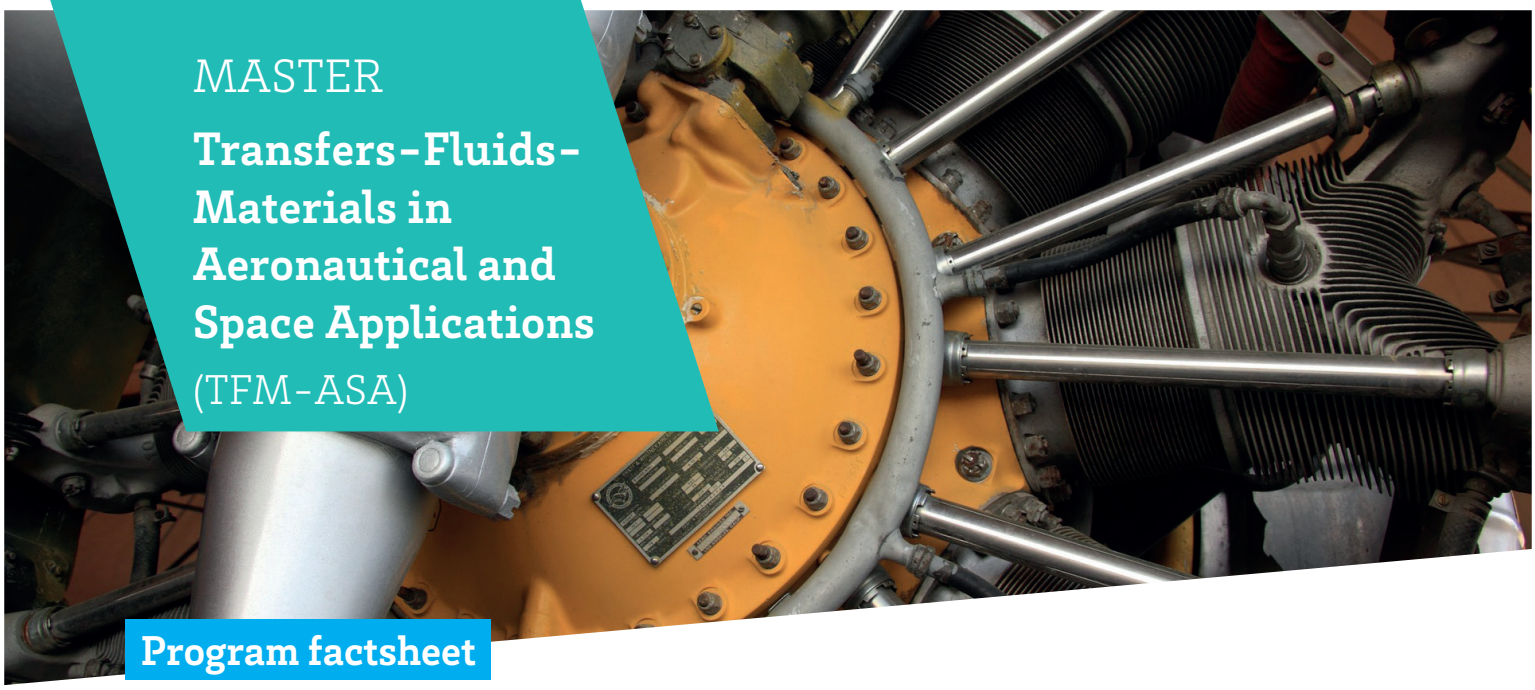
MASTER

Transfers-Fluids-Materials in Aeronautical and Space Applications

(TFM-ASA)



Program factsheet

ACADEMIC COOPERATION

Consortium of three universities:

- Germany: Brandenburg University of Technology Cottbus-Senftenberg (BTU)
- Belgium: Université catholique de Louvain (UCL)
- France: University of Bordeaux (UBx)

LEVEL

Students who successfully complete this international Master program in Engineering Sciences, including the compulsory mobility period, receive a joint French/German and Belgian diploma.

PROGRAM DURATION

2 years (120 ECTS).

ADMISSION REQUIREMENTS

Candidates must fulfill the following requirements:

- Hold a Bachelor degree in the fields of Engineering, Sciences and/or Technology.
- Provide strong academic records within the domain of sciences, particularly in solid and fluid mechanics, thermal sciences, thermodynamics and material sciences.

LANGUAGE REQUIREMENTS

All courses are taught in English.

- Students from English speaking countries must provide an official letter from the university confirming that English is the language of instruction.
- For other students, the TOEFL* or IELTS** test must be passed before applying for the Master. For TOEFL, a minimum of 550, 213 or 79 points respectively for paper-based, computer-based and Internet-based TOEFL/TOEIC test is required. Marks of at least 6.0 (out of a total of 9) are required for IELTS test.

PARTICIPATION FEES

Students pay common participation fees which cover the national enrolment fees and services of each partner university.
For more information, please consult the website: www.tfmasa.eu

Program outline

The TFM-ASA program combines studies and research based on aerodynamics, thermodynamics, compressible flows, turbulence, propulsion, combustion, turbomachinery, material science, to name a few. These themes are all directly connected with technical and fundamental studies as well as with aircraft, spacecraft, drone issues, etc.

The program is jointly managed by three academic European partners (France, Germany and Belgium) together with the support and expertise of:

Bordeaux / France:

- Industrial partners such as IRT St Exupery (Technological Research Institute), BAAS Society (Bordeaux Aquitaine Aéronautique et Spatial) and Aerospace Valley.
- Leading research laboratories, strongly involved in the aeronautic field such as I2M, LCTS, IMB (UBx).

Louvain-la-Neuve / Belgium:

- Applied Research Center CENEARO.
- Research Laboratories: IMMC (UCL).

Cottbus-Senftenberg / Germany:

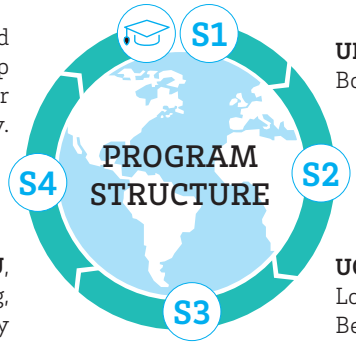
- Close collaborations with space agencies (ESA, DLR), ROLLS ROYCE, MTU Aero Engines.
- Research Laboratory: CFTM² at BTU

These industrial partners provide specialized classes and internships to the program, thus providing the students with an overview about the actual issues faced by companies today.
The result is a top-quality, highly-renowned international Master degree that meets the 120 ECTS syllabus requirements and corresponds with current job market criteria.

College of Science and Technology

université de BORDEAUX

Master thesis linked to the internship within a laboratory or a company.



UBx, Bordeaux, France

BTU, Cottbus-Senftenberg, Germany

UCL, Louvain-la-Neuve, Belgium

Year 1:

Semester 1

Material Science and Structures (30 ECTS)

- Simulation and design of structures (9 ECTS)
- Continuum mechanics and finite element method applied to solid mechanics (6 ECTS)
- Fatigue and fracture (3 ECTS)
- Materials and aeronautical structures (6 ECTS)
- Non-destructive evaluation for aerospace applications (3 ECTS)
- Assembly-bonding (3 ECTS)

Semester 2

Aeronautical Engineering (30 ECTS)

6 mandatory courses out of 7

- Internal combustion engines (5 ECTS)
- Aerodynamics of external flows (5 ECTS)
- Introduction to turbomachinery (5 ECTS)
- Advanced numerical methods (5 ECTS)
- Quality management and control (5 ECTS)
- Gas dynamics and reacting flows (5 ECTS)
- Thermodynamics of irreversible phenomena (5 ECTS)

Year 2:

Semester 3

Compulsory Elective Modules I (18 ECTS)

3 courses to be chosen out of 5

- Computational fluid dynamics (6 ECTS)
- Engineering acoustics - sound fields (6 ECTS)
- Turbulence modeling (6 ECTS)
- Thermodynamics, heat and mass transfer (6 ECTS)
- Flow measurements (6 ECTS)

Compulsory Elective Modules II (12 ECTS)

IIa: Mechanical Engineering, Aerodynamics, Fluid Mechanics, Aerospace Engineering, Materials Science

1 course to be chosen from a list

IIb: Physics, Mathematics, Computer Science

1 course to be chosen from a list

Semester 4

- Master thesis (30 ECTS)
- Internship in a research institute, an other scientific institution or a company, located preferably close to one of the three partners' locations but also anywhere in the world, upon prior acceptance of the Consortium.

Strengths

International program taught by experts (academics and industrial partners) from three different universities in Europe.

Joint French/German and Belgian Master degree.

International mobility period in the partner countries (2 semesters).

Close collaboration with industrial partners and research institutes with a guarantee of intensive training periods.

→ *And after?*

After graduation, students may access career opportunities such as:

- Engineers in companies / engineering departments of aeronautical and space sectors.
- Continuing their studies as PhD students and, after completion of their PhD, becoming postdoctoral researchers or assistant professors in universities or engineering schools.

How to apply?

Applications may be completed online: www.tfmasa.eu

Deadline:

- Mid-March 2021

Contact

EXECUTIVE COORDINATORS

- **Bordeaux:** Sakir Amiroudine / +33 (0) 5 56 84 79 29 sakir.amiroudine@u-bordeaux.fr
- **Cottbus:** Christoph Egbers, Michael Bestehorn egbers@b-tu.de, bestehorn@b-tu.de
- **Louvain-la-Neuve:** Vincent Legat / vincent.legat@uclouvain.be

ADMINISTRATIVE COORDINATORS

- **Bordeaux:** Anna Gerykova / anna.gerykova@u-bordeaux.fr
- **Cottbus:** René Grube / grube@b-tu.de
- **Louvain-la-Neuve:** Emmanuelle Brun / emmanuelle.brun@uclouvain.be

www.tfmasa.eu

b-tu Brandenburgische Technische Universität Cottbus - Senftenberg

UCLouvain

Mai 2020 - réalisation : université de Bordeaux