

DUAL DEGREE PROGRAMME IN AEROSPACE ENGINEERING

_____ with _____

ROYAL INSTITUTE OF TECHNOLOGY- KTH, SWEDEN



ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA
CAMPUS DI FORLÌ



International Day
14th January 2022

Dual Degree programme

- A Dual Degree is an **integrated study programme** offered upon the agreement between at least 2 universities of different countries.
- The integrated study programme and the regulations for the award of the degree diploma is defined within the **agreement**.
- Students will carry out part of their academic career at the host university (**1 academic year**).
- At the end of the study programme, students are awarded the **degree diploma of both universities**, legally valid in both countries.



Unibo



KTH



Dual Degree UNIBO-KTH

Students participating in this programme will gain a Dual degree in

- “Laurea Magistrale in Aerospace Engineering” from the University of Bologna (2-year degree programme, 120 ECTS/CFU)
and
- “Master Degree in Aerospace Engineering” from KTH (2-year degree programme, 120 ECTS/CFU)



The Dual Degree Programme Structure

- Students must earn **no less than 55 CFU/ECTS** included the final thesis.
- The amount of credits earned at UNIBO and KTH must sum up to **120 ECTS**.
- Students participating in the mobility programme are **exempt from** paying the university admission **fee at KTH**, except for the degree granting fee if required. Students will continue paying fees at UNIBO.
- The common integrated study programme is attached to the **Agreement** together with **correspondence tables**.



The Dual Degree Programme Structure

- The study programme will be individually defined for each student according to the correspondence table. Most of the exams are set, some elective exams can be chosen.
- For the **final degree project**, both institutions nominate one examiner who is responsible for the arrangement of the topic and subject area of the project; it must always receive an advanced approval in writing and it will be carried out under the supervision of the examiner of the host institution.
- Students will obtain the **degree qualification** at the University where they defend their final dissertation -> for UNIBO students it means at KTH!
- After they obtain their Diploma at KTH, UNIBO students will ask for the recognition of the Diploma at UNIBO, thus obtaining the two degree diplomas.



Study Programme Mobility

For students from the Aeronautics curriculum

ANNEX 2

Study programme for students from UNIBO (2021-2022)

FIRST YEAR AT UNIBO (Sept22-Aug22)

I YEAR @ UNIBO	CREDITS	PERIOD	YEAR	EQUIVALENT @ KTH	CREDITS	PERIOD	YEAR
AEROSPACE STRUCTURES	6	1	1	SD2411 Lightweight Structures and FEM	8	1	1
FATIGUE AND DAMAGE TOLERANCE	6	1	1				
ATMOSPHERIC FLIGHT DYNAMICS	6	2	1	SD2900 Fundamentals of Spaceflight	7,5	1	1
HELICOPTERS	6	2	1	SD2601 Fundamentals of Flight	7,5	1	1
MATHEMATICAL METHODS FOR ENGINEERING	6	1	1	ELECTIVE COURSE	4,5	1	1
APPLIED AERODYNAMICS	6	1	1	SF2863 Systems Engineering	7,5	1	1
FLOW STABILITY AND TURBULENCE	6	1	1				
NUMERICAL ANALYSIS	6	1	1	SD2805 Flight Mechanics	9	2	1
2 ELECTIVE COURSES (SEE TABLE 1)	12	1	1	2 ELECTIVE COURSES (SEE TABLE 2)	16		
CREDITS FIRST YEAR	60			CREDITS FIRST YEAR	60		

SECOND YEAR AT KTH (Aug22-Aug23)

II YEAR @ KTH	CREDITS	PERIOD	YEAR	EQUIVALENT @ UNIBO	CREDITS	PERIOD	YEAR
SD2810 Aeroelasticity	9	2	2	DESIGN METHODS IN THE AEROSPACE INDUSTRY	6	1	2
AK2030 Theory and Methodology of Science (Natural and Technological Science)	4,5	1	1	EXPERIMENTAL METHODS IN AERODYNAMICS	6	1	2
MJ2241 Jet Propulsion Engines, General Course	6	1	2	AEROSPACE TECNOLOGIES AND MATERIALS	6	1	1
ELECTIVE COURSES (SEE TABLE 2)	10,5	1	2	UNMANNED SYSTEMS	6	1	2
				1 ELECTIVE COURSE (SEE TABLE 4A)	6	1	2
THESIS	30	2	2	INTERNHSIP ABROAD	6		
				THESIS	24		
CREDITS SECOND YEAR	60			CREDITS SECOND YEAR	60		

TOTAL CREDITS - KTH DEGREE (60+60) 120

TOTAL CREDITS - UNIBO DEGREE (60+60) 120



Study Programme Mobility

For students from the Space curriculum

ANNEX 2

Study programme for students from UNIBO (2021-22)

FIRST YEAR AT UNIBO (Sept21-Aug22)

I YEAR @ UNIBO	CREDITS	PERIOD	YEAR
AEROSPACE STRUCTURES	6	1	1
FATIGUE AND DAMAGE TOLERANCE	6	1	1
ATMOSPHERIC FLIGHT DYNAMICS	6	2	1
SPACECRAFT ORBITAL DYNAMICS AND CONTROL	6	2	1
MATHEMATICAL METHODS FOR ENGINEERING	6	1	1
APPLIED AERODYNAMICS	6	1	1
FLOW STABILITY AND TURBULENCE	6	1	1
NUMERICAL ANALYSIS	6	1	1
2 ELECTIVE COURSES (SEE TABLE 1)	12		
CREDITS FIRST YEAR	60		

EQUIVALENT @ KTH	CREDITS	PERIOD	YEAR
SD2411 Lightweight Structures and FEM	8	1	1
SD2900 Fundamentals of Spaceflight	7,5	1	1
SD2601 Fundamentals of Flight	7,5	1	1
AK2030 Theory and Methodology of Science (Natural and Technological Science)	4,5	1	1
SF2863 Systems Engineering	7,5	1	1
SD2910 Spacecraft Dynamics	9	2	1
SD2920 System Integration for Space Technology, Part 1	3	2	1
ELECTIVE COURSES (SEE TABLE 2)	13		
CREDITS FIRST YEAR	60		

SECOND YEAR AT KTH (Aug22-Aug23)

II YEAR @ KTH	CREDITS	PERIOD	YEAR
AK2030 Theory and Methodology of Science (Natural and Technological Science)	4,5	1	1
EF2260 Space Environment and Spacecraft Engineering	6	1	2
EF2240 Space Physics	6	1	2
SD2925 System Integration for Space Technology	3	1	2
1 ELECTIVE COURSE (SEE TABLE 2)	10,5	1	2
THESIS	30	4	2
CREDITS SECOND YEAR	60		

EQUIVALENT @ UNIBO	CREDITS	PERIOD	YEAR
ROCKET PROPULSION	6	1	2
SPACECRAFT SUBSYSTEMS AND SPACE MISSION DESIGN	6	1	2
SPACECRAFT ATTITUDE DYNAMICS AND CONTROL	6	1	2
RADIO COMMUNICATION AND RADAR SYSTEMS	6	1	2
ELECTIVE EXAM (SEE TABLE 4B)	6	1	2
INTERNSHIP ABROAD	6	2	2
THESIS	24	2	2
CREDITS SECOND YEAR	60		

TOTAL CREDITS - KTH DEGREE (60+60) 120

TOTAL CREDITS - UNIBO DEGREE (60+60) 120



Study Programme Mobility

TABLE 2 - Elective courses at KTH *choose courses not included in the selected track

O	SG2215 Compressible Flow	7,5
O	SG2212 Computational Fluid Dynamics	7,5
O	EL2520 Control Theory and Practice, Advanced Course	7,5
O	SD2415 Process Modelling for Composite Manufacturing	6
O	SE2139 Fracture Mechanics	9
O	SD2432 Lightweight Design	20
O	SD2413 Fibre Composites - Analysis and Design	6
O	MJ2246 Rocket Propulsion	6
O	AG1321 Remote Sensing Technology	7,5
O	SD2414 Fibre Composites - Materials and Manufacturing	6
O	SD2905 Human Spaceflight	7,5
O	AH2923 Global Navigation Satellite Systems (GNSS)	7,5
O	SD2900 Fundamentals of Spaceflight	7,5
O	SD2910 Spacecraft Dynamics	9
O	EF2240 Space Physics	6
O	EF2245 Space Physics_ II	7,5
O	EF2260 Space Environment and Spacecraft Engineering	6
O	SH1003 Introductory Astronomy for Engineers	7,5
O	EL2620 Nonlinear Control	7,5
O	HL2035 Biomechanics and Neurionics	6
O	SD2805 Flight Mechanics	9
O	EH2720 Management of Projects	7,5
O	SD2810 Aerolasticity	9
O	MJ2241 Jet Propulsion Engines, General Course	6
O	EF2200 Plasma Physics	6



TEACHING CALENDAR at KTH

Autumn term	Mid August 2022- mid January 2023 2 teaching periods and two exams periods
Spring term	Mid January 2023 - June 2023 2 teaching periods and two exams periods

ACADEMIC LIFE at KTH

<https://www.kth.se/en/student/studier>



How to apply

Applications are **only processed through the Erasmus+ 2022-23 call for applications**, open from January 11th to **February 10th 2022, h. 13.00**.

Interested students must meet the Erasmus+ requirements plus the additional requirements indicated in the call for applications.

Compulsory additional documents to upload:

- CV written in English
- a valid B2 language certificate
- proposed study plan
- a valid visa or permit of stay (for non-EU students)

The **compulsory interview** in English language will be carried out on **February 22nd 2022** from 09.00.

The **2 selected students** will receive a **financial contribution** during their mobility to KTH through the **Erasmus+ mobility for studies**. Please carefully read the Call for applications at the following page:

<https://www.unibo.it/en/international/Studying-abroad/General-information-on-Erasmus/Participation-methods>



F.A.Q (Frequently Asked Questions)

I am planning to enrol on the MSc Aerospace Engineering at Unibo in September 2022, can I already apply for the Dual Degree?

No, only students currently enrolled on the 1st year of the MSc can apply for the dual degree programme.

I do not hold a B2 level certificate, will my application be accepted?

No, a B2 level certificate is required to participate in the programme.

Do I have to finish all first year exams before leaving for KTH?

No, there is no requirements in terms of exams. You can finish exams at Unibo on your return.

Who can help me with accommodation and other procedures at KTH?

You will be in contact with admission office and other colleagues at KTH.

What happens if I fail an exam at KTH?

You can resit the exam according to KTH regulations. If you fail again, you will sit the exam at Unibo.

What if I do not gain 55 credits at KTH?

You will not obtain the KTH Diploma. Your mobility at KTH will become just an Erasmus+ mobility and the credits obtained abroad will be transferred into your career. As long as at least an activity is transferred into your career, you will not lose the Erasmus+ funding.



Contact Details for KTH and UNIBO

Academic representatives and administrative contact persons for the Programme

<p>Unibo Academic representative Prof. Fabrizio Giulietti Via Fontanelle 40, 47122 Forlì (FC) Ph. +39 0543 3 74456 Email: fabrizio.giulietti@unibo.it</p> <hr/> <p>Prof. Alessandro Talamelli Via Fontanelle 40, 47122 Forlì (FC) Ph. +39 0543 3 74423 Email: alessandro.talamelli@unibo.it</p> <hr/>	<p>Unibo administrative rep Mrs Giulia Chiadini Ufficio gestione CdS Ingegneria Via Fontanelle 40, 47122 Forlì (FC) Ph. +39 0543 3 74416 Email: giulia.chiadini2@unibo.it web: www.unibo.it/AerospaceEngineering</p> <hr/>
<p>KTH Academic representative Responsible Prof. Raffaello Mariani E-mail rmariani@kth.se Telephone +46 8 790 64 65 Link https://www.kth.se/profile/rmariani</p>	<p>Ms. My Delby Master Coordinator School of Engineering Sciences Teknikringen 8, SE-100 44 Stockholm, Sweden Phone: +46-8-790 7163 Email: master@sci.kth.se</p>



Thank you for your attention!



Mrs. Giulia Chiadini

giulia.chiadini2@unibo.it

www.unibo.it/AerospaceEngineering

