

Appendix C

CLUSTER Dual Master Agreement between

Instituto Superior Técnico (IST) and Karlsruhe Institute of Technology (KIT)

Duration: Academic Year 2013 - 2018

Degree programme at IST:	M.Sc.
Degree awarded:	M.Sc.
Language of instruction	English
Entrance admission criteria:	See for each University
Degree programme at KIT: at IST	Energy Technologies (ENTECH) MEGE – Master in Energy Engineering and Management
Degree awarded:	M.Sc.
Language of instruction	English
Entrance admission criteria:	<p>PREVIOUS STUDIES: A COMPLETED BACHELOR'S DEGREE (180 ECTS) IN</p> <p>Mechanical Engineering Chemical and Process Engineering Electrical Engineering and Information Technology</p> <p>Admission of students with a different Bachelor's degree will be decided by the Admission Committee after assessment of equivalence. Additionally, admission to the ENTECH Master Program is subject to the following requirements:</p> <p>At KIT:</p> <p>a) proof of skills and qualifications provided by having achieved a required minimum score in the following courses:</p> <p>Higher Mathematics I – III (21 CP), Scientific Basics (7 CP), Engineering Mechanics I – IV (21 CP), Material Science I and II (incl. lab) (15 CP), Technical Thermodynamics I and II (13 CP), Mechanical Design I – IV (18 CP), Key qualifications in Mechanical Engineering (6 CP), Production Operations Management (5 CP), Electrical Engineering (8 CP), Informatics (8 CP), Measurement and Control Systems (7 CP), Fluid Mechanics (7 CP), Machines and Processes (7 CP).</p> <p>or, alternatively,</p> <p>b) proof of skills and qualifications provided by having achieved a required minimum score in the following subjects:</p> <p>Higher Mathematics (24 CP), Programme and Numerical Methods (8 CP), Physics (9 CP), General and Inorganic Chemistry (5 CP), Organic Chemistry (4 CP), Engineering Mechanics (15 CP), Material Science (8 CP), Mechanical Design and Apparatus Engineering (9 CP), Technical Thermodynamics (14 CP), Fluid Dynamics (5 CP), Heat and Mass Transfer (7 CP), Control Systems and System Dynamics (4 CP), Chemical Process Engineering (6 CP), Mechanical Process Engineering (6 CP), Thermal Process Engineering (6 CP), Bioengineering (3 CP), Labs (10 CP).</p> <p>or, alternatively,</p> <p>c) proof of successful completion of courses with the following contents:</p> <p>Mathematics I and II, Theory of Probability, Complex Analysis and Integral Transformations,</p>

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	<p>Physics I and II, Linear Electrical Grid, Electronic Circuits, Fields and Waves, Basic Practical Work, Digital Technique, Information Engineering, Lab Information Engineering.</p> <p>Students must fulfil all the requirements listed in either a) or b) or c). A combination of individual qualifications from different lists is not possible. If you do not submit proof of up to three qualifications in your previous studies, admission may still be granted if you provide a written commitment that you will complete these subjects successfully within the first two semesters of the master programme, in addition to the curriculum in its current version.</p> <p>At IST:</p> <p>BSc graduates in Engineering or Engineering Sciences (minimum 3 years).</p> <p>The level in Mathematics, Physics, Chemistry and Materials Science acquired in the degrees hold by the candidates when applying to the course must be, in scope and depth, equivalent to the corresponding courses taught in the undergraduate Engineering programmes at the Instituto Superior Técnico.</p> <p>The Scientific Committee of the course decides, upon the analysis of the academic curriculum of the candidate whether the equivalence is given.</p> <p>In case the equivalence is not given, the Scientific Committee of the course may decide to include in the study plan of the candidate a bridging program of propaedeutic courses (not counted in the course corresponding to 120 ECTS) at the level of basic courses.</p> <p>The Master in Energy Engineering and Management is a four semester programme, in a total of 120 ECTS. The curricular part corresponds to 90 ECTS, including 12 ECTS in Project Courses. The dissertation totals 30 ECTS.</p> <p>Conditional acceptance If you are in your final year of undergraduate education, you may also apply and, if qualified, receive a conditional acceptance. If you have not completed your studies, you must submit a written statement from the degree administration office confirming your enrolment and stating the expected graduation date.</p> <p>General eligibility criteria: English Proficiency Applicants must provide proof of their English language proficiency, which is generally established through an internationally recognized test. The following tests and scores are accepted. General English proficiency requirements</p> <p>IELTS Academic test (www.ielts.org) An overall band score of at least 6.5, with no section lower than 6, is required. IELTS-tests are verified online by KTH Admissions office. Sending a photocopy of your test together with your application documents is therefore sufficient.</p> <p>TOEFL Internet-based test, IBT (www.toefl.org) A total score of at least 92 (with writing section 22) is required. English test results from TOEFL must be sent directly from Educational Testing Service (ETS). The institution code of University Admissions in Sweden is Sweden 3477. You must provide this code in order for your results to be reported to University Admissions. During the first half of 2013 it is also possible to use the old code. When sending your score, you can choose any school type and department for University Admissions; it does not matter which one you select. Examinee score reports or photocopies are not accepted.</p> <p>Please note that it can take several weeks for your test scores to arrive from ETS, so arrange for them to be sent to University Admissions as early as possible.</p> <p>University of Cambridge / University of Oxford Certificates Certificate in Advanced English (CAE): grades A- C are accepted. Certificate of Proficiency in English (CPE): grades A- C are accepted.</p> <p>English proficiency tests are waived for applicants who:</p> <ul style="list-style-type: none"> - have completed a higher education degree instructed in English at a university or a university of applied sciences in an EU/EEA country. The official language of the degree programme has to be stated in the degree certificate or its supplement, or in the transcript of records. Statements by professors are not accepted. Other documentation regarding language of instruction will not be accepted. - have completed a degree instructed in English at a university that is physically located in one of the following countries: USA, Canada, UK, Ireland, Australia or
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	<p>New Zealand.</p> <p>Conditional Acceptance – English Proficiency Applicants who have completed a higher education degree in an EU/EEA country can be conditionally accepted to the programmes by submitting a certificate from your university confirming a level B2 (70%) with regard to the Common European Framework of Reference for languages, or providing an Institutional TOEFL test. If you receive a conditional offer, you should present your IELTS/TOEFL/Cambridge certificate to the KIC InnoEnergyAdmissions Office, who will forward it to your particular programme and appointed year 1 university such that your admission can be formalized.</p>
Number of students	Max. 50 per year

Schematic Study Plan

Option 1			
Year	Institution	Studies	Remarks
1	IST	Fuels Energy Conversion Energy Efficiency Nuclear Energy Renewable Energy	Student picks one specialization
2	KIT	Chemical Energy Carriers Thermal Power Plants Utility Facilities Renewable Energies Energy Economics and Informatics Energy in buildings Decentralized Power Supply and Grid Integration Nuclear and Fusion Technology	Student picks two main subjects
Option 2			
Year	Institution	Studies	Remarks
1	KIT	Chemical Energy Carriers Thermal Power Plants Utility Facilities Renewable Energies Energy Economics and Informatics Energy in buildings Decentralized Power Supply and Grid Integration Nuclear and Fusion Technology	Student picks two main subjects
2	IST	Fuels Energy Conversion Energy Efficiency Nuclear Energy Renewable Energy	Student picks one specialization
The schematic study plan is applicable to students originated from KIT or IST indifferently. The detailed study plan must be defined by the academic coordinators for each student.			

Contacts:

Academic responsible for the programme:	KIT: Prof. Ulrich Maas IST: Prof. Helena Ramos
Contact person:	KIT: Cornelia Schwenk IST: Prof. Helena Ramos

Signatures:

Date:	Date:
For IST	For KIT
Prof. Arlindo Oliveira President, Instituto Superior Técnico	Professor Eberhard Umbach President KIT
	Professor Alexander Wanner Vice President Higher Education and Academic Affairs KIT

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FIRST YEAR STUDIES	
IST :	KIT
Autumn Semester (minimum of 30 ECTS)	
Harmonization (18 – 24 ECTS)	Basic Courses (17+)
Specialization (24-36 ECTS):	Main subjects (16+):
<ul style="list-style-type: none"> - Chemical Fuels - Nuclear Energy - Renewable Energy - Energy Conversion - Energy Efficiency 	<ul style="list-style-type: none"> - Chemical Energy Carriers - Thermal Power Plants - Utility Facilities - Renewable Energies - Energy Economics and Informatics - Energy in buildings - Decentralized Power Supply and Grid Integration - Nuclear and Fusion Technology
Common training 28,5 ECTS	Electives (up to 20)
Additional Training 6 -18 ECTS Free training 0 - 9 ECTS	Innovation and Entrepreneurship (18+)
Spring Semester (minimum of 30 ECTS)	
Harmonization (18 – 24 ECTS)	Basic Courses (17+)
Specialization (24-36 ECTS):	Main subjects (16+):
<ul style="list-style-type: none"> - Chemical Fuels - Nuclear Energy - Renewable Energy - Energy Conversion - Energy Efficiency 	<ul style="list-style-type: none"> - Chemical Energy Carriers - Thermal Power Plants - Utility Facilities - Renewable Energies - Energy Economics and Informatics - Energy in buildings - Decentralized Power Supply and Grid Integration - Nuclear and Fusion Technology
Common training 28,5 ECTS	Electives (up to 20)
Innovation and Entrepreneurship (18+) (Additional Training 6 -18 ECTS Free training 0 - 9 ECTS)	Innovation and Entrepreneurship (18+)

Notes:

Lectures can change very quickly so we only noted the frame within which a student has to pick his or her schedule.

SECOND YEAR STUDIES	
KIT	IST
Autumn Semester (minimum of 30 ECTS)	
Main subjects (16+):	Specialization (24-36 ECTS):
<ul style="list-style-type: none"> - Chemical Energy Carriers - Thermal Power Plants - Utility Facilities - Renewable Energies - Energy Economics and Informatics - Energy in buildings - Decentralized Power Supply and Grid Integration - Nuclear and Fusion Technology 	<ul style="list-style-type: none"> - Chemical Fuels - Nuclear Energy - Renewable Energy - Energy Conversion - Energy Efficiency

Electives (up to 20)	Common training 28,5 ECTS
Innovation and Entrepreneurship (18+)	Innovation and Entrepreneurship (18+)
Interdisciplinary project (6)	Project in Energy Engineering and Management Interdisciplinary project (12)
Spring Semester (minimum of 30 ECTS)	
Master Thesis (30)	Master Thesis (30)

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