

**U! Virtual Exchange Credit Programme in Energy**  
Academic year 21/22, autumn semester

University	Country	Course name	Credits (ECTS)	Professor	Level	Link to Syllabus	Specific requirements for participation	Course start-end dates	Exam dates	Additional information	Teaching modality (synchronous/integrated to local students studying pace OR asynchronous)
KTH Royal Institute of Technology	Sweden	MI2480 Introduction to Computational Fluid Dynamics and Mathematics	6	Andrew Martin	Master	<a href="https://www.kth.se/student/kurser/kurs/MI2480?en">https://www.kth.se/student/kurser/kurs/MI2480?en</a>	Degree of Bachelor (Master of Science in Engineering) or the equivalent	2021/08/30 - 2022/01/17	No exams in the course	General information on courses at KTH: <a href="https://www.kth.se/en/student/kurs">https://www.kth.se/en/student/kurs</a>	Synchronous
KTH Royal Institute of Technology	Sweden	MI2411 Renewable Energy Technology	6	Andrew Martin/Ijevan Jayasuriya	Master	<a href="https://www.kth.se/student/kurser/kurs/MI2411?en">https://www.kth.se/student/kurser/kurs/MI2411?en</a>	B.Sc. in Engineering with prerequisite in MI1112 Thermodynamics 9 ECTS or corresponding knowledge. Minimum 5 ECTS thermodynamics	2021/08/30 - 2022/01/17	11-15 October: Controll test 1 13-17 December: Controll test 2	Information on course for corresponding knowledge: MI1112 Thermodynamics 9 ECTS <a href="https://www.kth.se/student/kurser/kurs/MI1112?en">https://www.kth.se/student/kurser/kurs/MI1112?en</a>	Synchronous
KTH Royal Institute of Technology	Sweden	MI2413 Energy and Environment	6	Viktoria Martin	Master	<a href="https://www.kth.se/student/kurser/kurs/MI2413?en">https://www.kth.se/student/kurser/kurs/MI2413?en</a>	Degree of Bachelor (Master of Science in Engineering) or the equivalent	2021/08/30 - 2022/01/17	13-17 December: Project examination 20-24 December: Take-home written exam	General information on courses at KTH: <a href="https://www.kth.se/en/student/kurs">https://www.kth.se/en/student/kurs</a>	Synchronous
KTH Royal Institute of Technology	Sweden	MI2503 Small Scale Polygeneration	6	Anders Malmquist	Master	<a href="https://www.kth.se/student/kurser/kurs/MI2503">https://www.kth.se/student/kurser/kurs/MI2503</a>	Degree of Bachelor (Master of Science in Engineering) or the equivalent	2021/08/30 - 2022/01/17	25-29 October	General information on courses at KTH: <a href="https://www.kth.se/en/student/kurs">https://www.kth.se/en/student/kurs</a>	Synchronous
Universidade de Lisboa – IST	Portugal	Biofuels	6	Joana Neiva Correia	Master	<a href="https://fenix.tecnico.ulisboa.pt/cursos/mege/disciplina-curricular/283003985068471">https://fenix.tecnico.ulisboa.pt/cursos/mege/disciplina-curricular/283003985068471</a>	no	27/09/21 - 12/11/21	15/11/21 - 26/11/21	tbc	tbc
Universidade de Lisboa – IST	Portugal	Energy Systems Management	6	Carlos Santos Silva	Master	<a href="https://fenix.tecnico.ulisboa.pt/cursos/mege/disciplina-curricular/283003985068457">https://fenix.tecnico.ulisboa.pt/cursos/mege/disciplina-curricular/283003985068457</a>	no	27/09/21 - 12/11/21	15/11/21 - 26/11/21	tbc	tbc
Universidade de Lisboa – IST	Portugal	Energy Storage	6	Fátima Montemor	Master	<a href="https://fenix.tecnico.ulisboa.pt/cursos/mege/disciplina-curricular/283003985068470">https://fenix.tecnico.ulisboa.pt/cursos/mege/disciplina-curricular/283003985068470</a>	no	27/09/21 - 12/11/21	15/11/21 - 26/11/21	tbc	tbc
Universidade de Lisboa – IST	Portugal	Hydropower	6	Helena Ramos	Master	<a href="https://fenix.tecnico.ulisboa.pt/cursos/mege/disciplina-curricular/283003985068478">https://fenix.tecnico.ulisboa.pt/cursos/mege/disciplina-curricular/283003985068478</a>	no	27 Sep - 12 Nov / 29 Nov-22 Dec / 3 Jan-28 Jan	15 Nov - 26 Nov / 31 Jan-09 Feb	tbc	tbc
Universidade de Lisboa – IST	Portugal	Wind Energy	6	Ricardo Pereira	Master	<a href="https://fenix.tecnico.ulisboa.pt/cursos/mege/disciplina-curricular/845953938490326">https://fenix.tecnico.ulisboa.pt/cursos/mege/disciplina-curricular/845953938490326</a>	no	27 Sep - 12 Nov / 29 Nov-22 Dec / 3 Jan-28 Jan	15 Nov - 26 Nov / 31 Jan-09 Feb	tbc	tbc
Universidade de Lisboa – IST	Portugal	Offshore Wind Energy	6	Ricardo Pereira	Master	<a href="https://fenix.tecnico.ulisboa.pt/cursos/mege/disciplina-curricular/283003985068475">https://fenix.tecnico.ulisboa.pt/cursos/mege/disciplina-curricular/283003985068475</a>	no	27 Sep - 12 Nov / 29 Nov-22 Dec / 3 Jan-28 Jan	15 Nov - 26 Nov / 31 Jan-09 Feb	tbc	tbc
Universidade de Lisboa – IST	Portugal	Solar Thermal Energy	6	Filipe Mendes	Master	<a href="https://fenix.tecnico.ulisboa.pt/cursos/mege/disciplina-curricular/283003985068477">https://fenix.tecnico.ulisboa.pt/cursos/mege/disciplina-curricular/283003985068477</a>	no	27/09/21 - 12/11/21	15/11/21 - 26/11/21	tbc	tbc
Grenoble INP-UGA	France	Design Models for Power Electronics	5	Jean-Luc Schanen	M2		Power Electronics fundamentals (topologies, basic rules)	01/09/2020	January 22	The main objective of this course is to provide models for understanding and computing all necessary aspects useful for designing a power electronics converter: passives (inductors, capacitors), thermal (semiconductor losses, heatsinks), and EMC (Electromagnetic Compatibility filters). A final project will gather all these models to design a case study using optimization techniques.	Mainly Asynchronous mode..
Grenoble INP-UGA	France	Optimization for energy systems	6	Ahmad Habib	M2	<a href="http://www.gipsa-lab.grenoble-inp.fr/~ahmad.habib/courses.html">http://www.gipsa-lab.grenoble-inp.fr/~ahmad.habib/courses.html</a>	programming and some mathematical notions	01/09/2021	January 22		Mainly Asynchronous mode
Grenoble INP-UGA	France	Heat and Mass Transfer	5	Samuel Siedel	M1	<a href="https://ense3.grenoble-inp.fr/en/academics/heat-and-mass-transfers-4eushmt">https://ense3.grenoble-inp.fr/en/academics/heat-and-mass-transfers-4eushmt</a>	Thermodynamic basis - Thermal modeling Basic - Heat transfer	01/09/2021	January 22		Asynchronous mode
Aalto University	Finland	AAE-E3100 Energy Carriers D	5	Martti Larmi	Master and Doctoral			I teaching period (Autumn) (see sheet 2 for study period dates)			
Aalto University	Finland	AAE-E3120 Circular Economy for Energy Storage	5	Annuksa Santasalo-Aarnio	Master and Doctoral	<a href="https://oodi.aalto.fi/a/opintjakstied.jsp?Opinkohd=1142146526&amp;haettuOpas=1&amp;Kieli=6">https://oodi.aalto.fi/a/opintjakstied.jsp?Opinkohd=1142146526&amp;haettuOpas=1&amp;Kieli=6</a>			Last week during the course		
Aalto University	Finland	EEN-E3007 Process Integration and Energy Optimization D	5	Risto Lahdelma	Master and Doctoral	<a href="https://oodi.aalto.fi/a/opintjakstied.jsp?Opinkohd=1125469287&amp;haettuOpas=1&amp;Kieli=6">https://oodi.aalto.fi/a/opintjakstied.jsp?Opinkohd=1125469287&amp;haettuOpas=1&amp;Kieli=6</a>		18/10/21 - 22/11/21			
Aalto University	Finland	PHYS-C6370 Fundamentals of New Energy Sources	5	Peter Lund, Muhammad Asghar	Master	<a href="https://oodi.aalto.fi/a/opintjakstied.jsp?Opinkohd=1113003828&amp;haettuOpas=1">https://oodi.aalto.fi/a/opintjakstied.jsp?Opinkohd=1113003828&amp;haettuOpas=1</a>					
Aalto University	Finland	ELEC-E8409 High Voltage Engineering	5	Matti Lehtonen	Master	<a href="https://oodi.aalto.fi/a/opintjakstied.jsp?Opinkohd=1121471987&amp;haettuOpas=1&amp;Kieli=6">https://oodi.aalto.fi/a/opintjakstied.jsp?Opinkohd=1121471987&amp;haettuOpas=1&amp;Kieli=6</a>					
Technical University of Darmstadt	Germany	Renewable Energies, Energy scenarios and Climate protection	5	Liselotte Schebek	Master	(data from the winter semester 2020/21) <a href="https://www.tuclan.tu-darmstadt.de/scripts/mgrqispi.dll?APPNAME=CampusNet&amp;PRGNAME=COURSEDETAILS&amp;ARGUMENTS=N000000000000001_N0000335_NO_N375083760390016_N375083760383017_NO_NO_NO">https://www.tuclan.tu-darmstadt.de/scripts/mgrqispi.dll?APPNAME=CampusNet&amp;PRGNAME=COURSEDETAILS&amp;ARGUMENTS=N000000000000001_N0000335_NO_N375083760390016_N375083760383017_NO_NO_NO</a>	participation in the regular synchronous tutorials	18.10.2021 - 18.02.2022	no fixed date yet - in February or March 2022	The lecture introduces the students to system considerations of problems of the future energy supply. In the lecture the topics societal challenges, characteristics of renewable energies as well as system technical and political approaches for the development of strategies for "sustainable" energy systems will be dealt with.	
Technical University of Darmstadt	Germany	Energy Technologies in Mechanical Engineering	5	Paul Michael Falk	Master	(data from the winter semester 2020/21) <a href="https://www.tuclan.tu-darmstadt.de/scripts/mgrqispi.dll?APPNAME=CampusNet&amp;PRGNAME=COURSEDETAILS&amp;ARGUMENTS=N000000000000001_N0000335_NO_N375297108825018_N375297108820019_NO_NO_NO">https://www.tuclan.tu-darmstadt.de/scripts/mgrqispi.dll?APPNAME=CampusNet&amp;PRGNAME=COURSEDETAILS&amp;ARGUMENTS=N000000000000001_N0000335_NO_N375297108825018_N375297108820019_NO_NO_NO</a>		18.10.2021 - 18.02.2022	no fixed date yet - in February or March 2022		
Universitat Politècnica de Catalunya (UPC)	Spain	Electrical Energy Processing	6	Hermínio Martínez	Master	<a href="https://www.upc.edu/estudis/pdf/guia_docent.php?codi=295111&amp;lang=en">https://www.upc.edu/estudis/pdf/guia_docent.php?codi=295111&amp;lang=en</a>		20/9/21-20/01/22	7/1/22-20/01/2022	EEBE	Synchronous integrated with local students
Universitat Politècnica de Catalunya (UPC)	Spain	Renewable Energy Systems	6	Volanda Vidal	Master	<a href="https://www.upc.edu/estudis/pdf/guia_docent.php?codi=295112&amp;lang=en">https://www.upc.edu/estudis/pdf/guia_docent.php?codi=295112&amp;lang=en</a>		20/9/21-20/01/22	7/1/22-20/01/2022	EEBE	Synchronous integrated with local students
Universitat Politècnica de Catalunya (UPC)	Spain	Fuel Cells	6	Jordi Llorca	Master	<a href="https://www.upc.edu/estudis/pdf/guia_docent.php?codi=295114&amp;lang=en">https://www.upc.edu/estudis/pdf/guia_docent.php?codi=295114&amp;lang=en</a>		20/9/21-20/01/22	7/1/22-20/01/2022	EEBE	Synchronous integrated with local students
Universitat Politècnica de Catalunya (UPC)	Spain	Energy Efficiency and Rational Use of Energy	5	Rigola Serrano, Joaquim	Master	<a href="https://www.upc.edu/estudis/pdf/guia_docent.php?codi=820737&amp;lang=en&amp;grup=1">https://www.upc.edu/estudis/pdf/guia_docent.php?codi=820737&amp;lang=en&amp;grup=1</a>	Bachelor degree in mechanical engineering, energy engineering, power engineering, and similar	3rd or 4th week of September - End January	Final exam period: 7 January - End of January	ETSEIB	synchronous/integrated to local students studying pace
Universitat Politècnica de Catalunya (UPC)	Spain	Energy Resources	5	Lluís Batet Miracle	Master	<a href="https://www.upc.edu/estudis/pdf/guia_docent.php?codi=820730&amp;lang=en&amp;grup=1">https://www.upc.edu/estudis/pdf/guia_docent.php?codi=820730&amp;lang=en&amp;grup=1</a>	Bachelor degree in mechanical engineering, energy engineering, power engineering, and similar	3rd or 4th week of September - End January	Final exam period: 7 January - End of January	ETSEIB	synchronous/integrated to local students studying pace
Universitat Politècnica de Catalunya (UPC)	Spain	Industrial IoT and Cyber-Physical Systems	3	Miguel Delgado/Luis Romeral	Master	<a href="https://ensiat.upc.edu/ca/estudis/estudis-en-enginyeries-industrials/master-universitari-en-enginyeria-de-sistemes-automatics-i-electronica-industrial/guies/205094.pdf">https://ensiat.upc.edu/ca/estudis/estudis-en-enginyeries-industrials/master-universitari-en-enginyeria-de-sistemes-automatics-i-electronica-industrial/guies/205094.pdf</a>	Basic knowledge of Industrial Automation	15th September - a 30th October	7th-21st January	ESEIAAT	Synchronous (asynchronous mode is also possible)
Universitat Politècnica de Catalunya (UPC)	Spain	Smart grids and data analytics	3	Alvaro Luna	Master					ESEIAAT	
Universitat Politècnica de Catalunya (UPC)	Spain	Smart Buildings	5	Blanca Tejedor	Master	<a href="https://www.upc.edu/content/master/guia/docent/pdf/ing/220243">https://www.upc.edu/content/master/guia/docent/pdf/ing/220243</a>	Basic knowledge of facilities in buildings	Mid-September 2021 - Mid-January 2022	7th-21st January	ESEIAAT	Synchronous (with the possibility to record the lesson for students who work in enterprises)