19880419-3376

Personnummer/ Personal identity number

Har den 13 december 2019 uppfyllt kraven för Teknologie doktorsexamen, ämne: Polymera konstruktionsmaterial på forskarnivå, 240 högskolepoäng, i enlighet med bestämmelserna i högskoleförordningen SFS 1993:100 med ändring 2006:1053 samt lokala bestämmelser.

Has 13 december 2019 on third cycle fullfilled the degree requirements for the Degree of Doctor of Philosophy (PhD), Subject: Polymeric Composite Materials 240 credits, in accordance with the regulations governing Swedish Higher Education SFS 1993:100 and the amendment 2006:1053 and internal rules and regulations.

Kurs Course	Högskolepoäng Credits	Datum Date
Rymdmaterial Aerospace Materials	9,0	2018-12-11
Kompositmaterial Composite Materials	9,0	2018-12-11
FEM i tekniska tillämpningar FEM in Engineering Problems	9,0	2018-12-11
Avhandlingspoäng, 181211 Licentlate Thesis, 181211	40,0	2018-12-11
Fiberkompositernas Mekanik Mechanics of Fiber Composites	7,5	2018-12-11
Projektfinansiering Research Funding	3,0	2018-12-11
Summer School DocMASE, Luleå 2016 Summer School DocMASE, Luleå 2016	2,0	2018-12-11
Summer School DocMASE, Luleå 2017 Summer School DocMASE, Luleå 2017	2,0	2018-12-11
Kohesiva och kontaktelement Cohesive and Contact Elements	7,5	2019-02-11
Experimental mekanik Experimental Mechanics	9,0	2019-02-11
Brottmekanik Fracture Mechanics	9,0	2019-02-11
Avhandlingspoäng Licentiate ThesisDoctoral	30,0	2019-03-29
Behörighetsgivande högskolepedagogisk kurs Qualifying Course for University Teachers	7,5	2019-05-29
Avhandlingspoäng Doctoral Dissertation	45,5	2019-09-04
Avhandlingspoäng Doctoral Dissertation	50,0	2019-09-25
Doktorsavhandling Doctoral thesis		2019-12-13

Luleå tekniska universitet Luleå University of Technology

Högskolepoäng Credits Datum Date

Avhandling Doctoral dissertation

Inverkan av mikrostruktur på sprickutveckling mellan fiber och matris i fiberkompositer under dragbelastning.

Influence of Microstructure on Debonding at the Fiber/Matrix Interface in Fiber-Reinforced Polymers under Tensile Loading.

Luleå den 18 december 2019 / 18 December 2019

Catarina Forsberg Examenshandläggare

Degree Evaluation Officer

För kurs på forskarnivå ges endast betyget Godkänd. The only grade awarded for course on the third cycle is Pass.

60 högskolepoäng motsvarar ett läsårs heltidsstudier.
60 credits are equivalent to one academic year of full-time studies.



Prot. 1082/230



AREA SERVIZI AGLI STUDENTI E AI DOTTORANDI

Degree certificate

we hereby certify that:

Mr DI STASIO LUCA born in CERNUSCO SUL NAVIGLIO (MI) on 19/04/1988, has gained at this Politecnico on 03/10/2013 the laurea magistrale (equivalent to Master of Science) in

SPACE ENGINEERING

(D.M. 270/04 - class LM-20 of Laurea Magistrale in Aerospace and aeronautical engineering)

Score is 110/110.

We certify, moreover, that the same has passed the following evaluation tests with the result, expressed in thirtieths, indicated at the side; the value of each is given in credits (CFU/ECTS) and the corresponding scientific-disciplinary sector (SSD) is indicated:

	Description	890	CLUSCIS 550	CNECTS	Boom	Servestor	Example date
	AEROSPACE STRUCTURES	ING-IND/04	10.0	10,08	29	3	10/02/2011
	AEROTHERMODYNAMICS	ING-IND/06	10.0	10.00	30		17/02/2011
	ORBITAL MECHANICS	ING-IND/00	10.0	10,00	33	11.	23/02/2011
	FUNDAMENTALS OF THERMOCHEMICAL PROPULSION	ING-IND/07	100	10.08	28	2	25/17/2011
	COMMUNICATIONS SKILLS	1N/3-(NID/15	2.0	2.30	APPROVED	2	20/00/2011
U	MATHEMATICAL METHODS FOR ENGINEERS	MAT/05	10.0	10.00	APPROVED	- 1	14/07/2012
П	SPACE ENGINEERING DESIGN SYNTHESIS	BNG-IND/05	6.0	6.00	APPROVED	2.	14/07/2012
ш	SPACE SYSTEMS DESIGN	ING-INDUD	0,0	6.00	APPROVED	2	14/07/2012
U	SPACECRAFT ATTITUDE DYNAMICS AND CONTROL	ING-IND/05	8.0	8,00	APPROVED	1	14/07/2012
12	Control of the Contro	NG-M0/04	4.0	8.00	APPROVEO		14/07/2013
ш	AEROSPACE TECHNOLOGIES AND MATERIALS II	ING-INDG2	4.0	8100	APPROVED		14003012
U	TELECOMMUNICATION SYSTEMS	9VG-4NF/03	6.0	6.00	APPROVED	3	56/07/2012
	DYNAMICS AND CONTROL OF AEROSPACE STRUCTURES WITH FUNDAMENTALS OF AEROELASTICITY	ING-IND/04	10.0	10.00	23	2	28/08/2012
	HEAT TRANSFER AND THERWAL ANALYSIS	ING-IND/10	6.0	6/00	25	- 2	07/02/2013
	CRADUATION THESIS AND FINAL WORK			20.06	APPROVED	1	17/09/2013

Logical		
U.	exame taken within an international mobility programme	(6)

The weighted average, calculated on the evaluation tests passed, excluding exams as extra, is 28.75/30 (105.42/110).

Stamp duty paid using the virtual system by Authorization of the Ministry of Finance no. DT2/10/101212/00 dated 17.11.2000



AREA SERVIZI AGLI STUDENTI E AI DOTTORANDI

Milano, 03/12/2014 (dd/mm/yyyy)

ID no. 765795

Prot. 1082/230

Il Dirigente dell'Area Servizi agli Studenti e ai Dottorandi

Il Dirigente dell'Area Servizi agli Studenti e ai Dottorandi Assunta Marrese

The above handwritten signature is replaced with a printed signature of the responsible person according to Article 3, paragraph 2 of Legislative Decree no. 39 dated 12th February 1993.

The officer in charge CONFALONIERI ALESSANDRA

According to Article 15 of Law no. 183 dated 12th November 2011, the present certificate cannot be issued for Public Administration Offices or Private Operators of public services.

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POLITECNICO DI MILANO

MEL SERVINOU STUDENTI E AI DOTTORANDA Segviptio Segretarie Studenti Dott. Ma Alessandia Contaloni. Ai

DREXEL UNIVERSITY - Office of the University Registrar

UNIVERSITY OTH MAIN CAMPUS - 3141 CHESTINITI ST - CURTIS HALL RIM 281 - PHILADEL PAIR PM 19104 CENTER CITY HAPMEMANN CAMPUS • MAIL STOP 446 • 245 N. 15TH ST., PHILADELPHIN, PA. 19102-1492



Date Issued: 02-DEC-2014 Univ City Official Mail

Page :

× 20063 Cernusco Sul Luca Di Stasio Luca Di Stasio Via Verdi 64 TALY Current Name

Student No: 12505124

Record of

Course Level: Graduate Quarter Luca Di Stasio Bruggerweg 17 8037 SMITZERLAND Zurich. Issued To:

Current Program
MS in Mechanical Engineering
College : College of Engineering
Major : Mechanical Engineering Fall Quarter 11-12 Only Admit:

16-JUN-2012 Degrees Awarded MS in Mechanical Engineering

CRED GRD Major : Mechanical Engineering COURSE TITLE

BUEL

TRANSPER CREDIT ACCEPTED BY THE INSTITUTION:

Politecnico Di Milano

2011

Independent Study and Research Special Topics Nech Engr 9.00 OPts: GPA-Hrs: 9.00 800

Bhra:

36.00 INSTITUTION CREDIT:

Engineering 11-12 Quarter Mechanical

12.00 GPA-Hrs: 12.00 OPLS:

Mechanical Engineering Winter Quarter 11-12 MEM

Applied Engr Analy Methods II Robust Control Systems II

MEM

COURSE TITLE tution Information continued:

œ PIS

CRED GRD 3.00 OPTS Design of nano-resonators 12.00 GPA-HIB: 12.00 Advanced Dynamics II

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Good

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MEM

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> da para da par 00 00 Applied Engr Analy Nethods III Nagnetostrictive NEMS Mechanical Engineering Spring Quarter 11-12 Standing 593 669

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OPER TOTALS Applied Optimal Control I ST:Applied Robust Control 12.00 GPA-Hrs: 12.00 Rhrs: Standing 733 800

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Points 144.00 36.00 36.00 TOTAL INSTITUTION TOTAL TRANSPER

4.00 GPA

> 36,00 180.00 TRANSCRIPT 9.00 45.00 SMD OF 90.6 45.00 ****************

OVERALL

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GPA:

6.00 A

Applied Engr Analy Methods Mechanics Of Bio Tissues Robust Control Systems Advanced Dynamics 1 Shre: Good Standing 999 684 591

MEM

MEM MEM MBM

8000

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48.00 GPA

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3.00 At CONTINUED ON MENT COLUMN

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AND PRIVACY ACT OF 1974, AS AMENDED. THIS RECORD CANNOT BE RELEASED TO ANY OTHER PARTY PURSUANT TO THE FAMILY EDUCATIONAL RIGHTS WITHOUT THE WRITTEN CONSENT OF THE STUDENT. Joseph J. Salomone, University Registrar
The entraty saided and signed traverge actions on the SCRIP-SAFF would pape with the name of the unversity ported in white pape against the back of the obscurrent. A ranged and is not suppored. The reasons global must be visible from both when

whether or not certain repeatable courses are included (I) in the student's GPA, An (I) shown in this column indicates that the grade shown in the GRD column is NOTE: The column after GRD and PTS labeled R refers to included in the student's grade point average.

A BLACK AND WHITE TRANSCRIPT IS NOT OFFICIAL - VOID APPEARS IF COPIED

TRANSCRIPT EXPLANATION

6.4

TO THE OWNER OF THE OWNER.	GENERAL INFORMATION	
Dravel Unbersity was	is originally warned Grewel Institute of Art. Science as	of Indiany, In 1934 &
became Directed testin	has of Technology. The Institute was formally rena	and Dresel University
during the 1969-70 at	roadentic pasic	

ACCREDITATION

Drivel University is according by the Communically of Permaylvania and by the Middle States Association of Chileges and Schools.

COLLEGES AND SCHOOLS

Drevel University consists of eight colleges and four echnols - The Antonotte Westphal College of Mistia Arts and Design: The College of Arts and Sciences: The Sernett S. LeBtw. College of Business: The College of Engineering: The Goodwin College of Phillipsicial Studies, The College of Information Science and Technology, The Earle Mack School of Law: The College of Medicine thus its own transactor and legands, The College of Nursing and Heath Professions, The School of Biomedical Engineering, Science and Heath Sistems, The School of Education and The Sixhool of Public Health.

DREXEL COOPERATIVE EDUCATION PROGRAM- Underpractually Firthfree Students

The Dread Cooperative Emacation Program enables the student to afternate employment with countrecels. Under this plan, the student attends the University for the entire freshmen year. Then, beginning their second year in accordance with their program of study/major, the student alternates periods of full-time disserved studies and full-time employment with Orexel University approved employers. Normally, students are placed in a job for a six-month period (two quarters) of employment alternating with two quarters of dissersion study. This program is mandatory except for the non-co-op programs. Bludgets warn Draxel Cooperative Style (DCU) by successfully completing Cooperative Education counsework as well as the employment period which further retails written reports that evaluations assure their work expensiones.

TRANSCRIPT FORMAT

Current Format - This transcript is an officially resign document that is primed on light blue security paper and signed by the University Registrar. A raised used in blocks stump to dut used for is it required. When photosopied, the word void will appear. A black and white document is not an original and should not be accepted as an official institutional document. The transcript is produced by the Bartner student system which the University Implantented in Summer Quarter 1995-99. The student is identified by an eight-digit University (C) number. followed by program of study information and finally information pertaining to degree awarded. If there are chargin to interesprograms of study or cooperative work assignments, they will appear storing appropriate forms throughout the body of the transcript. Grade point averages (tarm and cumulative) are displayed for each term following cause information, Academic actions (Dean's List, Proteition and dishesse) will appear on a separate line at the end of each tenti 5 work, lafter the grade point average. Withdrawal hadory will appear under the form entry of the larm in which the student withdrew. The curriculative gradit point average information will be listed at the end of the transcript under the header named "Transcript Totals"

Old Format - A transcript produced under the old format is a capy of the original document on file in the Office of the University Registrat generated from an original scanned document. Comutative grade point overage data for an undergraduate fol-lane student is posted only once a year on the Instruction copy. All changes of major are listed at the top of the surrector along with withdrawal history. Geoperative work assignments appear under the term that the student is scheduled for a period of impleyment and Probation Dear's List appear across the laptiom of the warners.

Combined Format - A copy of the archived countryors will be attached to the surrors format style transcript for those students who started prior to 1979 and continued their education pind

ACADEMIC YEAR & GREDIT HOUR EQUIVALENT

The Gravel University acodemic year is based on four equal terms, known as quarters, which cornect of ten weeks of class and that week of final existing. In ordan to conwert quarter profit hours to equivalent semicular cradit hours, multiply the number of quarter cracks by two-dilate. If you want to convent exmenter credit hours to equivalent querter credit hours, multiply by three-hals or 1,5

COURSE NUMBERING SYSTEM

Effective Fall term of 1993-93, Drawel University converted to a more deficitive assessnumbering system. The numbering system defined course levels as noted below.

98.0	gradiate	-	7,000		Gend	
	Spatia	ty Co	3506		500-	one.

100-290 Lower Ownigh Coones 300-400 Upper Division Courses

Courses laken for Floriers gradit will have a nominant below the course entry that indicesse "Course Talvan for Horers Cradit"

11-4

11 0+ D+ Passing 1.33 Paging

EXPLANATION OF GRADES (New +1- Grade State-Effective Fall 2006)

Emple Point White

4.0

Abda: CH. Criedle **MCE** No Crock DOU Diesel Go-Operative Unit Exemption (Course proviously talons)

NCU Failed Work Torm Pins (Discontinued April 1608) Satisfactory Transfer o'edit assentati Uninterlectory Courses within a block W Vithbonsi

Will Withstown Pagging (Discontinued October 1975) VAThdows Fallog (Discontinued Opinior 1974)

1MC (Discontinued September 1956) Failure oto grade reported on an Incomplete Contract) INF Absent from Erral NER No Grada Reported HR. No Grade Alegates žF. No Grade Baccotted (Discontinued September 1996).

Discontinued September 1973) 54. A temporary grade (except NOR) may be assigned at the discussion of the instructor who believes additional time is required to complete the course may introduce.

CALCULATING GRADE POINT AVERAGE (based on 4.0 scale)

Conditional Page

Add the credit hour value of all courses (GPA hours) is which a student receives a grade of Art. by course credital. This can be calculated on a term and cumulative tiesis. All courses taken while an Undergraduate are included in the undergraduate comulative SPA.

Constative GPA Calculation for Repeated Courses (Policy prior to Fall 1999)

An undergraduate student has the option to repeat a course tup to live timest in which heather was initially enrolled beginning with the Pall 1902-93 term and ending with the Burnner 1996-99 term. The form GPA catculation remains the same however, the cumulative GPA is calculated as follows: a) only the grade from the must except enrollment will count in this cumulative GPA if the gods from the most mount eurobrient in the same or before than the cognal prote and b) both grades will be calculated in the cumulative GPA if the grade from the most recent enreckment is lower than the original grade.

Consulative SPA Calculation for Repeated Courses (Policy Effective Fall 2001)

Courses with an Indicator of 'T' in the R Column on the transcript will be included in the term bild cumulative credits earned and GPAs, occurses with an "E" in the Ricolumn will be excluded from land consultative GPAs but retained to sum and cumulative credits etternylled; coerses with an "A" in the R column will be excluded from term and currulative gradits damed, but retained in term and complaine credits whereplet and calculated in the term and complaine GPA's

TO TEST FOR AUTHENTICITY. Translucent globe icons MUST be wisible from both sides when held lowers a light source. The face of this transcript is policed on the SUMIN-SAFE" paper with the name of the institution appearing in white tiple over the laber of the entire document.

DREWEL UNIVERSITY + CHEERE, LAWVERSITY + DREWEL LAWVERSITY + DREWELL LAWVERS INVERSITY DESIGN, UNIVERSITY CREATED UNIVERSITY CREATED UNIVERSITY CREATED UNIVERSITY CREATED UNIVERSITY CREATED UNIVERSITY CREATED.

ADDITIONAL TESTS: When protocopied: a biject security statement containing the metric large and the second VOID VOID VOID suprem ever the face of the entire document. When this paper is bounded by train bound, an authoritic document will stain brown. A black and white or polar copy of this occurrent is not an original and should not be accepted as an official institutional document. This document cannot be minned to a filling party without the written consent of the student. This is an accordance with the Fernity Educational Rights and Prescry Act of 1974. If you have any quantum about this document, places control our office. ALTERATION OF THIS DOCUMENT MAY BE A CRIMINAL OFFICIALE. SB185258 + SCRIP-BAFE® Security Products, Inc. Cincornati, Ort+U.B. Pytent 5, 171,040



AREA SERVIZI AGLI STUDENTI E AI DOTTORANDI ID no. 714194

Prot. 1082/228

Degree certificate

we hereby certify that:

Mr DI STASIO LUCA born in CERNUSCO SUL NAVIGLIO (MI) on 19/04/1988, has gained at this Politecnico on 22/09/2010 the laurea (equivalent to Bachelor of Science) in

AEROSPACE ENGINEERING

(D.M. 270/04 - class L-9 of degrees in Industrial Engineering)

Score is 110/110.

We certify, moreover, that the same has passed the following evaluation tests with the result, expressed in thirtieths, indicated at the side; the value of each is given in credits (CFU/ECTS) and the corresponding scientific-disciplinary sector (SSD) is indicated:

Description	SSD	SSD	DIMECTS.	Score	Semester	Exam dute
CHEMISTRYA	CHMDT	5.0	5.00	30 CUM LAUDE	1	11/02/2008
	NO-N004	6.5				19/02/2008
UNDAMENTALS OF AEROSPACE ENGINEERING	NO-INDIGE	1.0	12.50	27	7.	
	NG-INDOS	5.0				
	MAT/05	5.0	3320	30	18	forto pers
MATHEMATICAL ANALYSIS A AND GEOMETRY	MAT/93	5.0	10,00			0303/2006
NFORMATICS C	ING-INT/00	5,0	5.00	29	2	02/07/2006
EXPERIMENTAL PHYSICS A + B	FISIO1	10.0	10.00	27	2	07/07/2008
BUSINESS ADMINISTRATION	ING-IND/35	5.0	5.00	29	2	10/07/2008
MATHEMATICAL ANALYSIS B	MAT/05	5.0	5.80	35 CUM LAUDE	2	14/07/2008
THERMODYNAMICS AND HEAT TRANSFER	ING-IND/10	10.0	10.00	- 27	1	03/02/2009
THEORETICAL MECHANICS	MAT/07	10.0	10.00	30	i	18/02/2009
INTEGRATION OF FUNDAMENTALS OF AEROSPACE ENGINEERING	ING:NO/15	2.5	2.50	27	- 2	29/06/2000
	ING-NODE	0.0	10.00	30 DUN LAUDE	1	30/06/2016
CIRCUITS AND ELECTRONICS	ING-INDUSC.	2.0				
	NO-INDIGS	2.0	10000			GM28/15/000
source and a supplication of the supplication	MATION	2.5	5.06	30	.2	02/07/2006
INTEGRATION OF CALCULUS 2	MAT/66	2.5				64507,8235
FUNDAMENTALS OF AUTOMATIC CONTROL	ING-INF/04	8.0	8.00	30	2	1007/200
	MAT/05	5.0	To an an	30 CUM LAUDE	7	34.0025550
APPLIED NUMERICAL ANALYSIS	MAT/00	5.0	10.00			31/07/20
AEROSPACE SYSTEMS	ING-NO/05	0.8	9.00	28	2	09/09/200
DYNAMICS OF AEROSPACE SYSTEMS	ING-NORS	0.0	8.03	28	1.1	18/02/2010
	ICARIO	5.0	40.00	30	- 4	29/02/2019
FUNDAMENTALS OF STRUCTURAL MECHANICS	ING-ND64	5.0	10.00		7.3	2302001
FLUID DYNAMICS	ING-INDIGE	10.0	10.00	27	2	29/05/201
AEROSPACE PROPULSION	ING-INDIO7	7,0	7.00	27	1	06/07/201
	ING-INDIC4	4.0	7.00	27	31	08407/201
AEROSPACE TECHNOLOGIES AND MATERIALS	ING-IND/28	3.0	CV-SIMI		35176	- vareteen)
FUNDAMENTALS OF ATMOSPHERIC AND SPACE FLIGHT MECHANICS	ING-INDIGI	7.0	7.00	21	2	14/07/201
PRINCIPLES OF AEROSPAGE EXPERIMENTATION	ING/IND/04	6.0	6,00	29	2	27/8/1/201
INTEGRATION OF FINAL DEGREE TEST		3	2.00	APPROVED	2	15/09/201
INTEGRATION OF FINAL DEGREE TEST			4.00	APPROVED	2	15/08/201



AREA SERVIZI AGLI STUDENTI E AI DOTTORANDI ID no. 714194

Prot. 1082/228

Deathplan	580	Chiects SSD	CIWECTS.	Source	Serrestar	Examilate:
FINAL DEGREE TEST	NG-N0/07	1.0	9	APPROVED	2	15/85/2010
	(MG-IND/03	1.0	10,000			
	ING-INO/OI	0.5	3.00			
	IN0-840/22	0.0	77			

The weighted average, calculated on the evaluation tests passed, excluding exams as extra, is 28.56/30 (104,73/110).

Stamp duty paid using the virtual system by Authorization of the Ministry of Finance no. DT2/10/101212/00 dated 17.11.2000

Milano, 03/12/2014 (dd/mm/yyyy)

Il Dirigente dell'Area Servizi agli Studenti e ai Dottorandi Assunta Marrese

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The officer in charge CONFALONIERI ALESSANDRA

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POLITECNICO DI MILANO

ARA SENIO AGU STUCHTI E AL DOCRIVANO Servizio Segreterie Studen