

InterMaths

Implementing Agreement

between

Università degli Studi dell'Aquila

University of L'Aquila (Italy)

Represented by its Rector, *Prof. Paola Inverardi*

and

Київський національний університет імені Тараса Шевченка

Taras Shevchenko National University of Kyiv (Ukraine)

Represented by its Rector, *Prof. Leonid Huberskyi*



INTERMATHS

Joint MSc programme in Applied and Interdisciplinary Mathematics

2018 edition

Preamble

Having regard

- to the *Consortium agreement and award of a double degree 2017–2022 “InterMaths – An International Joint Master’s Programme in Applied and Interdisciplinary Mathematics”* established on 29 June 2017 (as well as to the Amendment no. 1/2018) and aimed at offering an International Joint Master’s Programme in the field of *Applied and Interdisciplinary Mathematics*,
- to the Association Annex between the four Founding Partners and Taras Shevchenko National University of Kyiv (TSNUK) signed on 11 June 2018,

the undersigning institutions hereby agree on the following:

Article 1 – Limits of admitted students

For the 2018 cohort the maximum number of students admitted to the International Joint Master’s Programme is 16 (sixteen), 8 (eight) for each Institution. This provision may be modified, subject to the agreement between parties.

Article 2 – Selection of applications

Each Institution will select, among their students, highly motivated candidates for the International Joint Master’s Programme. Afterwards, the Local Coordinators from UAQ and TSNUK will evaluate the submitted applications and compile a ranked list of eligible students.

Eligible students will be notified by their home Institution and will have 15 days to accept the position offered.

Article 3 – Structure of the joint pathways, mobility and study plan

InterMaths is designed for completion in two academic years of full-time study.

InterMaths requires students to achieve 120 credits to gain their final qualification.

Students will spend their first year of study at UAQ and their second year of study at TSNUK, earning at least 60 ECTS credits in each Institution.

An overview of how each academic year is structured is provided below.

Branch "Scientific Computing"

First year (University of L'Aquila)

MODULE NAME	ECTS Credits	Sem.
Dynamical systems and bifurcation theory Module 1. Dynamic Systems Simulation (3,0 ECTS) Module 2. Advanced Topics in Applied Mathematics (3,0 ECTS)	6	I
Functional analysis in applied mathematics and engineering Module 1. Advanced Topics in Functional Analysis (6,0 ECTS) Module 2. Theory of Optimization in Functional Spaces (3,0 ECTS)	9	I
Workshop of mathematical modelling / Problems of Non-Classical Optimization	6	I
Process and operations scheduling Module 1. Information Networks (3,0 ECTS) Module 2. Project Management (3,0 ECTS)	6	I
Communication of scientific knowledge Module 1. Methodology and organization of research with principles of intellectual property (3,0 ECTS) Module 2. Professional and corporate ethics (3,0 ECTS)	6	I-II
Numerical methods for differential equations / Numerical Simulation of System Dynamics (4,0 ECTS)	6	II
Kinetic and hydrodynamic models / Fundamentals of Nonlinear Dynamics	6	II
Big data models and algorithms / Pattern Recognition (5,0 ECTS)	3	II
Network optimisation / Methods of Nonsmooth Optimization (3,0 ECTS)	6	II
Parallel computing / Computer-Aided Analytical Simulation (4,0 ECTS)	6	II
Total	60	

Second year (Taras Shevchenko National University of Kyiv)

MODULE NAME	ECTS credits	Sem.
Fundamentals of Artificial Intelligence	3,0	III
Numerical Simulation Technologies	3,0	III
Methods of Operator Systems Analysis	3,0	III
Applied Problems of Analysis. Module 1. Problems of Multivalued Analysis.	3,0	III
Applied Problems of Analysis. Module 2. Advanced Topics of Analysis	2,0	III
<i>A choice of 2 disciplines between:</i>		
<ul style="list-style-type: none"> - Modern problems of computational mathematics (8,0 ECTS). - Nonclassical Optimal Control Problems (8,0 ECTS). - Classic and Quantum Information Theory (8,0 ECTS). - Mathematical Models of Cybernetics. Module 1. Mathematical Foundations of Population Genetics. Module 2. Mathematical Models of Option Pricing (8,0 ECTS). - Modeling of Information Systems. Module 1. Discrete-continual methods for solving boundary-value problems. Module 2. Computational Intellect (8,0 ECTS). - Technologies of Information Processing. Module 1. Information virtual environments. Module 2. Numerical Information Processing Technologies (8,0 ECTS). 	16,0	III

<i>A choice between:</i> - Optimization methods and models in logistics systems (5,0 ECTS). - Adaptive information processing and recognition (5,0 ECTS). - Nonclassical Problems of Mathematical Physics (5,0 ECTS).	5,0	IV
<i>A choice between:</i> - Mathematical Risk Theory (3,0 ECTS). - Applied Problems of Risk Theory (3,0 ECTS).	3,0	IV
<i>A choice between:</i> - Artificial Intelligence Methods (3,0 ECTS). - Advanced Topics of Artificial Intelligence (3,0 ECTS).	3,0	IV
<i>A choice between:</i> - Information Technologies (3,0 ECTS). - Technologies of Information Processing and Analysis (3,0 ECTS).	3,0	IV
Research Internship	6,0	
Master Thesis	10,0	
Total	60	

Individual study plans may also be taken into account, if appropriately motivated, but they will have to be approved by the *InterMaths* Executive Committee.

Article 4 – Extra conditions

a) Extra conditions from UAQ side

To fulfil the regularisation norms from UAQ side, students must reach A2 level of Italian language during the academic year in UAQ. UAQ offers the courses of *Italian language and culture for foreigners* which will allow non-native students to understand and use basic local language in the most common situations of their university life. Upon successful completion of a before mentioned courses, *InterMaths* students will be awarded 6 ECTS credits, which will be acknowledged as extra credits in the student's curriculum.

b) Extra conditions from TSNUK side

To fulfil the regularisation norms from TSNUK side, students must gain additional credits in the following courses and activities (or their equivalents in the partner institution):

Branch	Course or activity title	ECTS credits
Scientific Computing	Operating Systems	5,0

Article 5 – Master's thesis and thesis defence

In addition to examinations, at the end of the joint Master Programme, each student will prepare a Master's thesis. A professor or researcher from the host University, as far as possible in close collaboration with the thesis supervisor from the University of origin, will tutor the thesis. The thesis will be drawn up and delivered in English according to the rules provided by the University where the training takes place.

The thesis defence will take place in English according to the teaching regulation of both academic institutions. The thesis discussion will take place only once in the University where the training takes place, in the presence of both members or by videoconference. The final manuscript as well as the data and the associated results will be subjected to the rules of confidentiality of the University where the training takes place.

Article 6 – Degree titles awarded by each signatory partner

The parties agree that:

- TSNUK will award a Master Degree in *Applied Mathematics*;
- UAQ will award a Master Degree in *Mathematical Engineering*.

Article 7 – Student obligations

For students studying at TSNUK, the Study Regulations in force at TSNUK are applied.

For students studying at UAQ, the Study Regulations in force at UAQ are applied.

Article 8 – Credit transfer policy between the two signatory partners

Student's performance is documented through the national grading system in force at each partner institution.

The transfer of records from the institution, where the student is actually studying, should be done once upon completion the study year, but not later than August 30th.

The transfer and recognition of grades from an institution to the other will be based on the scales below:

Grades gained at UAQ					
UAQ	TSNUK	UAQ	TSNUK	UAQ	TSNUK
30 e lode	100	23	75	OTTIMO	90
30	97	22	73	DISTINTO	85
29	94	21	70	BUONO	75
28	90	20	67	DISCRETO	65
27	88	19	64	SUFFICIENTE	60
26	85	18	60	INSUFFICIENTE	<60
25	81	<18	<60		
24	78				

Grades gained at TSNUK					
TSNUK	UAQ	TSNUK	UAQ	TSNUK	UAQ
99-100	30 e lode	85-87	26	70-72	21
97-98	30	81-84	25	67-69	20
94-96	29	78-80	24	64-66	19
90-93	28	74-77	23	60-63	18
88-89	27	73-74	22	<60	<18

Moreover, if necessary, grades gained at TSNUK can be transferred in UAQ as follows:

Grades gained at TSNUK		
	TSNUK	UAQ
90-100	EXCELLENT	OTTIMO
85-89	GOOD	DISTINTO
75-84		BUONO
65-74	SATISFACTORY	DISCRETO
60-64		SUFFICIENTE
1-59	UNSATISFACTORY	INSUFFICIENTE

Article 9 – Participation costs

Students participating in the InterMaths programme will be enrolled in both institutions but will pay tuition fees (and any other fees) to their home institution. Any other fee that might be required for the enrolment and registration at the Hosting Institution, being a party to this Agreement, will be covered by this Institution, local authorities, public bodies and private corporations available at the Hosting Institution.

Students will be required to pay for any other personal expenses during their exchange period (including travelling, lodging and food expenses), unless otherwise specified.

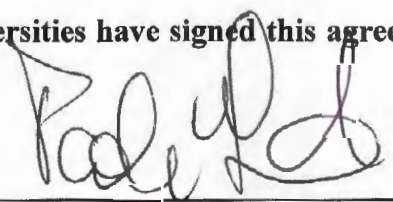
Students participating in the InterMaths programme are required to obtain (prior to beginning of their mobility period) a private health insurance covering personal accident insurance and civil liability insurance during travelling and studying.

Article 10 – Amendments and validity of the agreement

This Annex may be amended or modified by written agreement signed by both of the institutions involved and it is valid for students of the cohort 2018.

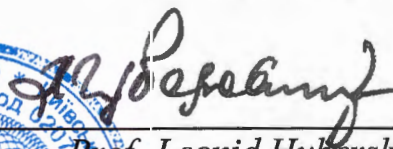
In witness hereof, the cooperating universities have signed this agreement in two originals by their hands on the day and year below.

L'Aquila, 6 SEPT 2018


Prof. Paola Inverardi, Rector
Università degli Studi dell'Aquila
University of L'Aquila (Italy)



Kyiv, 9 AUG. 2018


Prof. Leonid Huberskyi, Rector
Київський національний університет імені Тараса Шевченка
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