MONGOLIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY
МОНГОЛ УЛСЫН ШИНЖЛЭХ УХААН ТЕХНОЛОГИЙН ИХ СУРГУУЛЬ

Co-funded by the Erasmus+ Programme of the European Union

SMARTCITY
Innovative Approach Towards a Master Program on Smart Cities Technologies

ERASMUS+ KA2 Capacity Building in the field of Higher Education

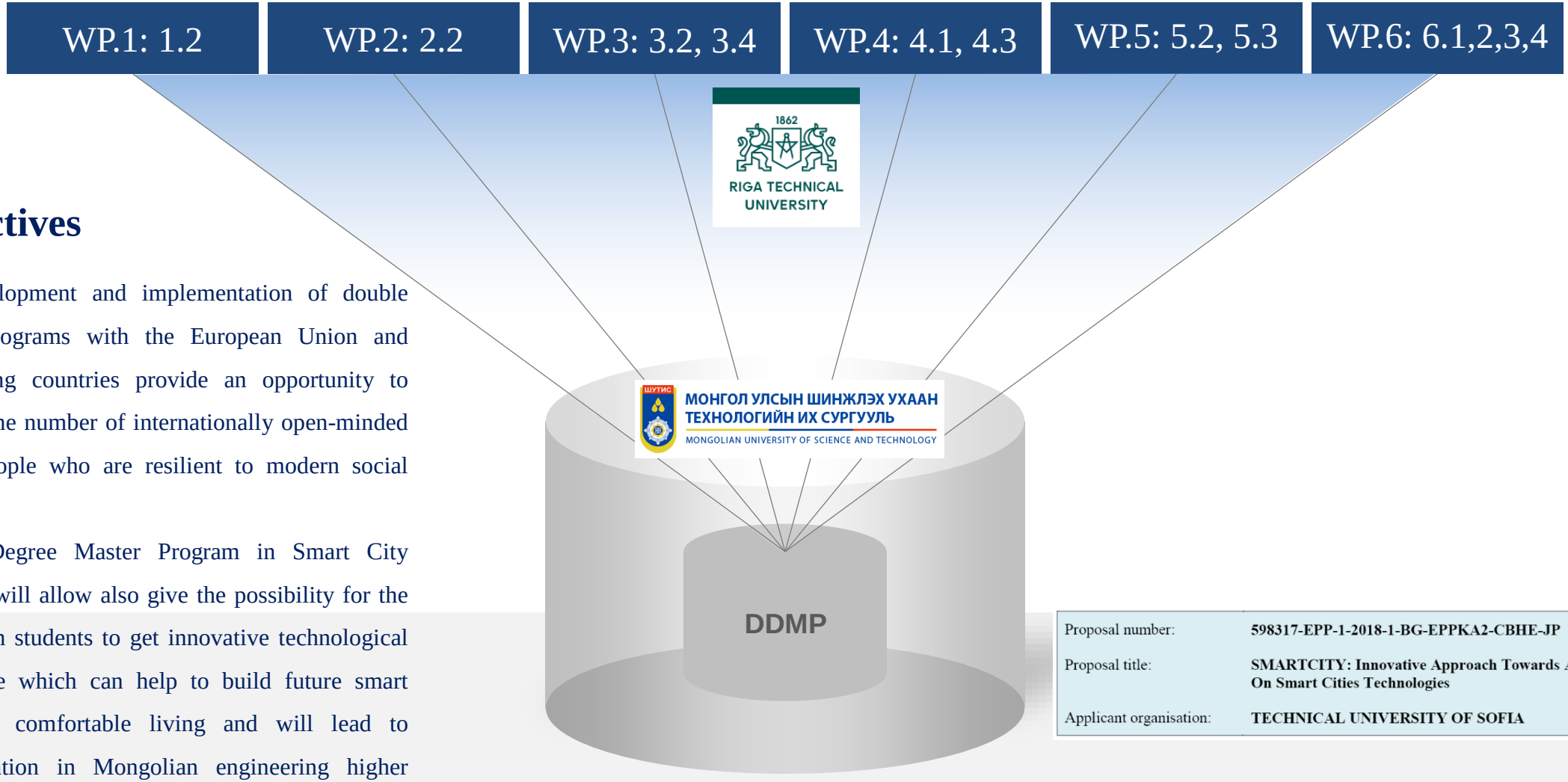
SMARTCITY: Innovative Approach Towards a Master Program on Smart Cities Technologies / SMRCITY

598317-EPP-1-2018-1-BG-EPPKA2-CBHE-JP

MUST, Ulaanbaatar, Mongolia

Prof. Narantsetseg Yadmaa,
Graduate School of Engineering, MUST

Double Degree Master Program



Objectives

The development and implementation of double degree programs with the European Union and neighboring countries provide an opportunity to increase the number of internationally open-minded young people who are resilient to modern social change.

Double Degree Master Program in Smart City (DDMP) will allow also give the possibility for the Mongolian students to get innovative technological knowledge which can help to build future smart cities for comfortable living and will lead to modernization in Mongolian engineering higher education.

Proposal number:	**598317-EPP-1-2018-1-BG-EPPKA2-CBHE-JP**
Proposal title:	**SMARTCITY: Innovative Approach Towards A Master Program On Smart Cities Technologies**
Applicant organisation:	**TECHNICAL UNIVERSITY OF SOFIA**

Double Degree Master Program

WP.1: 1.2	WP.2: 2.2	WP.3: 3.2, 3.4	WP.4: 4.1, 4.3	WP.5: 5.2, 5.3	WP.6: 6.1,2,3,4

D 1.1. Business community needs and expectations analyzed

Mongolian University of Science and Technology
Baga Toiruu-34, 8th Horoo, Sukhbaatar District, Ulaanbaatar, Mongolia
Tel 976-11-324085
Fax 976-11-324085
www.must.edu.mn

Business analyses, December, 2019

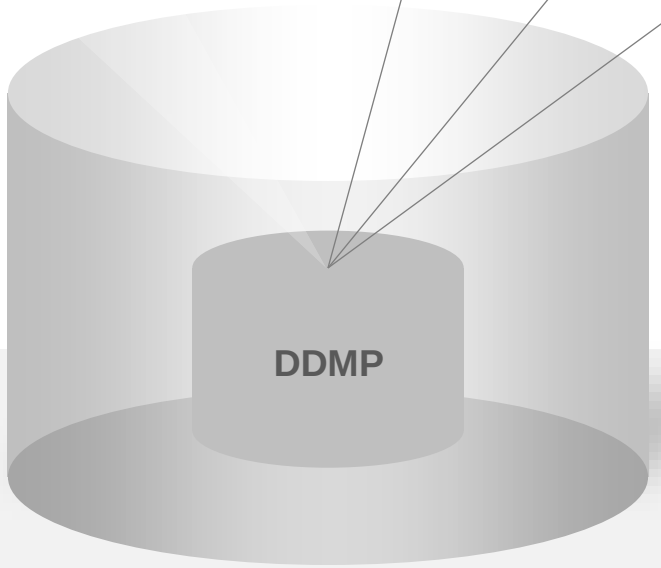
http://www.smartcity.edu.mn/Documents

Download: Business of the demands for knowledge and skills in SCT

Double Degree Master Program

WP.1: 1.2	WP.2: 2.2.	WP.3: 3.2, 3.4	WP.4: 4.1, 4.3	WP.5: 5.2, 5.3	WP.6: 6.1,2,3,4

D 2.1. New curricula developed
D 2.2. New syllabi developed
D 3.2. Teaching materials and training guide developed



http://www.smartcity.edu.mn/Documents

Download: Fundamentals of Smart city

http://www.smartcity.edu.mn/Documents

Download: Control Technique with Microcontrollers

http://www.smartcity.edu.mn/Documents

Download: Basics of Occupational Safety

Results

WP.2.2. Curriculum of Master program in SCT

RIGA TECHNICAL UNIVERSITY

МОНГОЛ УЛСЫН ШИНЖЛЭХ УХААН ТЕХНОЛОГИЙН ИХ СУРГУУЛЬ
MONGOLIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY

COOPERATION AGREEMENT

concerning a

Double Diploma Master Programs

between

Riga Technical University

- hereinafter referred to as RTU

of Master Degree Program in Computerised Control of Electrical Technologies

and

Mongolian University of Science and Technology

- hereinafter referred to as MUST

of Master Degree Program in Electronics Engineering

leading to the award of the Double Diploma

of Master Degree of Engineering Science in Electrical Engineering at RTU

and

of Master Degree of Science in Electronics Engineering at MUST

Annex 1: Program Structure Annex 1: Program Structure

	S1: Fall semester	S2: Spring semester	S3: Fall semester	S4: Spring semester
MUST students: 4 semesters 120 ECTS	Courses at RTU 30 ECTS	Courses at RTU 30 ECTS	Courses at MUST: 30 ECTS (additional semester)	Master thesis 30 ECTS

Signature and stamp
Done in Riga

Vice-Rector for Academic Affairs
Prof. **Uldis Sukovskis**

Date 18/05/2021

Signature and stamp
Done in Ulaanbaatar

Vice-President for Academic Affairs
Prof. **Khaltar Enkhjargal**

Date 30/08/2021

Results

WP.2.2. Curriculum of Master program in SCT

Type 2

No	Code	Study Program		(RTU) ECTS	Grade	Date
A	**Compulsory study courses**			**43.0/64.5**		
1	EEP584	Theory of Electronic Converters of Electrical Energy	at RTU	6		
2	EEP585	Simulation of Electrical Processes	at RTU	7.5		
3	EEP574	Commutated Converters	at RTU	7.5		
4	EEP572	The Control Systems of Power Electronics Equipment	at RTU	7.5		
5	EEP570	Elements of Automatics	at RTU	13.5		
6	EEP433	Automated Electrical Drive	at RTU	4.5		
7	EEP524	Design of Power Electronics Systems	at RTU	4.5		
8	EEP504	Microprocessors - based Automation Systems	at MUST	4.5		
9	EEP582	Control Technique with Microprocessor Controllers	at MUST	4.5		
10	EEP583	Industrial Frequency Converters and Inverters	at RTU	3		
11	IDA700	Basics of Labour Protection		1.5		
12	F.CN725	Basics of Occupational Safety	at MUST	1.5		
B	**Compulsory elective study courses**			**14.0/21.0**		
B1	**Field-specific study course**			**10.0/15.0**		
1	EEP408	Automated Electro technological Processes		3		
2	EEP430	Industrial Programmable Control Systems		3		
3	EEP342	Application of Computers in Electrical Equipment Design		3		
4	EEP319	Methods of Analysis and Calculation of Electronic Circuits		3		
5	EEP458	Typical Electrical Drive		7.5		
6	EEP581	Electro-Magnetic Compatibility in Industrial Electronic Equipment	at RTU	3		
7	EEP453	Industrial Electronic Equipment		6		
8	EEP345	Unconventional Systems of Energy Conversion and Accumulation		4.5		
9	EES162	High Voltage Engineering		4.5		
10	J.EE702	Semiconductor IC technology	at MUST	4.5		
11	J.EE703	Digital Signal Processing	at MUST	4.5		
12	U.SC705	Fundamental of Smart city	at MUST	3.0		
B2	**Humanities and social sciences study courses**			**2.0/3.0**		
1	HSP483	Industrial Relations		3.0		
2	U.SC782	Industrial Relations	at MUST	3.0		
3	HSP488	Business Sociology		3.0		
4	HSP430	Social Psychology		3.0		
5	HSP446	Pedagogy		3.0		
B3	**Economics and management study courses**			**2.0/3.0**		
1	IUE217	Business Economics		3.0		
2	IUE308	Entrepreneurship Planning		3.0		
3	U.SC783	Entrepreneurship Planning and Smart cities	at MUST	3.0		
4	IRO313	Organization of Production		3.0		
C	**Free elective study courses**			**4.0/6.0**		
1	SDD701	Innovative Product Development and Entrepreneurship	at RTU	6.0		
E	**Final examination**			**26.0/39.0**		
1	U.SC780	Internship: Smart city and ICT	at MUST	9.0		
2	J.EE795	Master Thesis	at MUST	15.0		
3	EEI002	Master Thesis	at RTU	15.0		
4	EEL002	Master Thesis		30.0		
5	EEP002	Master Thesis		30.0		

Signature and stamp

Done in Riga

Vice-Rector for Academic Affairs

Prof. **Uldis Sukovskis**

Date 18/05/2021

Signature and stamp

Done in Ulaanbaatar

Vice-President for Academic Affairs

Prof. **Khaltar Enkhjargal**

Date 30/08/2021

Results

WP.2.2. Curriculum of Master program in SCT

Annex 3: Study Plan for Students of MUST

Type 1

No	Code	Study Program	Section	(RTU) ECTS
1st Semester: Courses at RTU				**39.0**
1	EEP584	Theory of Electronic Converters of Electrical Energy	A	6
2	EEP585	Simulation of Electrical Processes	A	7.5
3	EEP572	The Control Systems of Power Electronics Equipment	A	7.5
4	EEP570	Elements of Automatics	A	13.5
5	EEP433	Automated Electrical Drive	A	4.5
2nd Semester: Courses at RTU				**18.0**
6	EEP574	Commutated Converters	A	7.5
7	EEP524	Design of Power Electronics Systems	A	4.5
8	EEP583	Industrial Frequency Converters and Inverters	A	3
9	EEP581	Electro-Magnetic Compatibility in Industrial Electronic Equipment	B1	3
3rd Semester: Courses at MUST				**19.5**
10	F.CN725	Basics of Occupational Safety	A	1.5
11	F.EE714	Microprocessors - based Automation Systems	A	4.5
12	F.EE715	Control Technique with Microprocessor Controllers	A	4.5
13	J.EE702	Semiconductor IC technology	B1	4.5
14	J.EE703	Digital Signal Processing	B1	4.5
4th Semester: Courses at MUST/RTU				**54.0**
15	U.SC705	Fundamental of Smart city	B1	3.0
16	U.SC782	Industrial Relations	B2	3.0
17	U.SC783	Entrepreneurship Planning and Smart cities	B3	3.0
18	SDD701	Innovative Product Development and Entrepreneurship	C	6.0
19	U.SC780	Internship: Smart city and ICT	E	9.0
20	EEI002/ J.EE795	Master Thesis	E	30.0
			Total:	**130.5 ECTS**

Annex 2: Courses Alignment Table

No	Code	RTU Study Program	MUST subjects (credit transfer plan) ECTS	(RTU) ECTS	
A	**Compulsory study courses**			**64.5**	
1	EEP584	Theory of Electronic Converters of Electrical Energy	To be acquired at RTU	6	
2	EEP585	Simulation of Electrical Processes	To be acquired at RTU	7.5	
3	EEP574	Commutated Converters	To be acquired at RTU	7.5	
4	EEP572	The Control Systems of Power Electronics Equipment	To be acquired at RTU	7.5	
5	EEP570	Elements of Automatics	To be acquired at RTU	13.5	
6	EEP433	Automated Electrical Drive	To be acquired at RTU	4.5	
7	EEP524	Design of Power Electronics Systems	To be acquired at RTU	4.5	
8	EEP504	Microprocessors - based Automation Systems	Transferred to RTU	4.5	
9	EEP582	Control Technique with Microprocessor Controllers	Transferred to RTU	4.5	
10	EEP583	Industrial Frequency Converters and Inverters	To be acquired at RTU	3	
11	IDA700	Basics of Labour Protection	Transferred to RTU	1.5	
B	**Compulsory elective study courses**			**21**	
B1	**Field-specific study course**			**15**	B1 - Completed at Partner Institution
1	EEP408	Automated Electro technological Processes		3	
2	EEP430	Industrial Programmable Control Systems	Transferred to RTU	3	
3	EEP342	Application of Computers in Electrical Equipment Design		3	
4	EEP319	Methods of Analysis and Calculation of Electronic Circuits		3	
5	EEP458	Typical Electrical Drive		7.5	
6	EEP581	Electro-Magnetic Compatibility in Industrial Electronic Equipment	To be acquired at RTU	3	
7	EEP453	Industrial Electronic Equipment		6	
8	EEP345	Unconventional Systems of Energy Conversion and Accumulation	Transferred to RTU	4.5	
9	EES162	High Voltage Engineering	Transferred to RTU	4.5	
B2	**Humanities and social sciences study courses**		Must be agreed a priory for each student in according to the individual plan	**3.0**	B2 - Completed at Partner Institution
1	HSP483	Industrial Relations	Transferred to RTU	3.0	
2	HSP488	Business Sociology		3.0	
3	HSP430	Social Psychology		3.0	
4	HSP446	Pedagogy		3.0	
B3	**Economics and management study courses**		Must be agreed a priory for each student in according to the individual plan	**3.0**	B3 - Completed at Partner Institution
1	IUE217	Business Economics		3.0	
2	IUE308	Entrepreneurship Planning	Transferred to RTU	3.0	
3	IRO313	Organization of Production		3.0	
C	**Free elective study courses**			**6.0**	
1	SDD701	Innovative Product Development and Entrepreneurship	To be acquired at RTU	6.0	
E	**Final examination**			**30.0**	
2	EEI002	Master Thesis	Transferred to RTU	**30.0**	In cooperation with MUST (15 ECTS transferred from MUST)
3	EEL002	Master Thesis		**30.0**	
4	EEP002	Master Thesis		**30.0**	

Signature and stamp
Done in Riga

Vice-Rector for Academic Affairs
Prof. **Uldis Sukovskis**

Date 18/05/2021

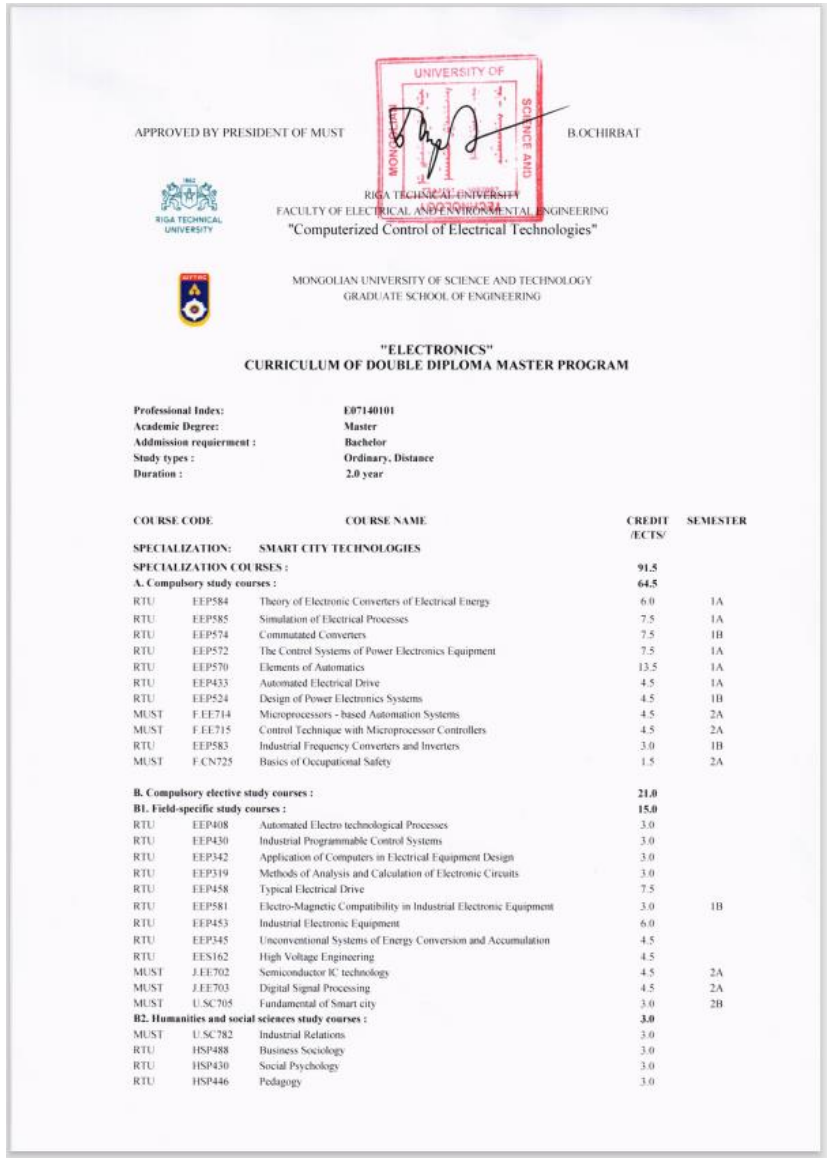
Signature and stamp
Done in Ulaanbaatar

Vice-President for Academic Affairs
Prof. **Khaltar Enkhjargal**

Date 30/05/2021

Results

WP.2.2. Curriculum of Master program in SCT



APPROVED BY PRESIDENT OF MUST B.OCHIRBAT

RIGA TECHNICAL UNIVERSITY
FACULTY OF ELECTRICAL AND ENVIRONMENTAL ENGINEERING
"Computerized Control of Electrical Technologies"

MONGOLIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY
GRADUATE SCHOOL OF ENGINEERING

"ELECTRONICS"
CURRICULUM OF DOUBLE DIPLOMA MASTER PROGRAM

Professional Index:	**E07140101**
Academic Degree:	**Master**
Addmission requierment :	**Bachelor**
Study types :	**Ordinary, Distance**
Duration :	**2.0 year**

COURSE CODE		COURSE NAME	CREDIT /ECTS/	SEMESTER
SPECIALIZATION:		**SMART CITY TECHNOLOGIES**		
SPECIALIZATION COURSES :			**91.5**	
A. Compulsory study courses :			**64.5**	
RTU	EEP584	Theory of Electronic Converters of Electrical Energy	6.0	1A
RTU	EEP585	Simulation of Electrical Processes	7.5	1A
RTU	EEP574	Commutated Converters	7.5	1B
RTU	EEP572	The Control Systems of Power Electronics Equipment	7.5	1A
RTU	EEP570	Elements of Automatics	13.5	1A
RTU	EEP433	Automated Electrical Drive	4.5	1A
RTU	EEP524	Design of Power Electronics Systems	4.5	1B
MUST	F.EE714	Microprocessors - based Automation Systems	4.5	2A
MUST	F.EE715	Control Technique with Microprocessor Controllers	4.5	2A
RTU	EEP583	Industrial Frequency Converters and Inverters	3.0	1B
MUST	F.CN725	Basics of Occupational Safety	1.5	2A
B. Compulsory elective study courses :			**21.0**	
B1. Field-specific study courses :			**15.0**	
RTU	EEP408	Automated Electro technological Processes	3.0	
RTU	EEP430	Industrial Programmable Control Systems	3.0	
RTU	EEP342	Application of Computers in Electrical Equipment Design	3.0	
RTU	EEP319	Methods of Analysis and Calculation of Electronic Circuits	3.0	
RTU	EEP458	Typical Electrical Drive	7.5	
RTU	EEP581	Electro-Magnetic Compatibility in Industrial Electronic Equipment	3.0	1B
RTU	EEP453	Industrial Electronic Equipment	6.0	
RTU	EEP345	Unconventional Systems of Energy Conversion and Accumulation	4.5	
RTU	EES162	High Voltage Engineering	4.5	
MUST	J.EE702	Semiconductor IC technology	4.5	2A
MUST	J.EE703	Digital Signal Processing	4.5	2A
MUST	U.SC705	Fundamental of Smart city	3.0	2B
B2. Humanities and social sciences study courses :			**3.0**	
MUST	U.SC782	Industrial Relations	3.0	
RTU	HSP488	Business Sociology	3.0	
RTU	HSP430	Social Psychology	3.0	
RTU	HSP446	Pedagogy	3.0	
B3. Economics and management study courses :			**3.0**	
RTU	IUE217	Business Economics	3.0	
MUST	U.SC783	Entrepreneurship Planning and Smart cities	3.0	
RTU	IRO313	Organization of Production	3.0	
C. Free elective study courses :			**6.0**	
RTU	SDO701	Innovative Product Development and Entrepreneurship	6.0	2B
E. Final examination :			**39.0**	
MUST	U.SC780	Internship: Smart city and ICT	9.0	2B
MUST	J.EE795	Master Thesis	15.0	2B
RTU	EEI002	Master Thesis	15.0	2B
MASTER PROGRAM:				
		SPECIALIZATION COURSES :	**91.5**	
		A. Compulsory study courses :	**64.5**	
		B. Compulsory elective study courses :	**21.0**	
		C. Free elective study courses :	**6.0**	
		E. FINAL EXAMINATION :	**39.0**	
		Internship:	**9.0**	
		Master Thesis	30.0	
		TOTAL CREDIT :	**130.5**	

HEAD OF INFORMATION AND COMMUNICATION TECHNOLOGY DEPARTMENT G.KHISHGJARGAL

БАТЛАВ. ШУТИС-ИЙН РЕКТОР Б.ОЧИРБАТ

МОНГОЛ УЛСЫН ШИНЖЛЭХ УХААН, ТЕХНОЛОГИЙН ИХ СУРГУУЛЬ
ИНЖЕНЕРИЙН АХИСАН ТҮВШИНИЙ СУРГУУЛЬ

БУГД НАЙРАМДАХ ЛАТВИ УЛСЫН ТЕХНИКИЙН ИХ СУРГУУЛЬ
ЦАХИЛГААН, ХУРЭЭЛЭН БУЙ ОРЧНЫ ИНЖЕНЕРИЙН ФАКУЛЬТЕТ
"ЦАХИЛГААН ТЕХНОЛОГИЙН КОМПЬЮТЕРИЙН ХЯНАЛТ, УДИРДЛАГА"

"ЭЛЕКТРОНИК" МЭРГЭЖЛИЙН
ХАМТАРСАН МАГИСТРЫН СУРГАЛТЫН ТӨЛӨВЛӨГӨӨ

Мэргэжлийн индекс:	**E07140101**
Олгох боловрольн зэрэг:	**Магистр**
Элсэгчийн боловрольн түвшин:	**Бакалавр**
Сургалтын хэлбэр:	**Одор, Зайн**
Сургалтын хугацаа:	**2.0 жил**

Results

D 2.2. New syllabi developed

Co-funded by the Erasmus+ Programme of the European Union

SMARTCITY Innovative Approach Towards a Master Program on Smart Cities Technologies

Mongolian University of Science and Technology
Curriculum development and Registration office

COURSE SYLLABUS			
Course Title	Introduction to Occupational Safety		
Course Code	OS	**No. of Credits**	3
Department		**School**	MUST
Pre-requisites Course Code	none	**Co-requisites Course Code**	
Course coordinator	T.Uranchimeg	**Room number**	
Email	Uranchimegtc@must.edu.mn	**Telephone No.**	80254553
Other Instructor(s)			
Learning Hours			
Course Type			
Offer in Academic Year			
Introduction language			

AIMS AND OBJECTIVE

- Recognize the int goals of occupati
- Demonstrate a ba hazards in the wo
- Identify a concep
- Relate promotion
- Discuss the roles the conceptual fr
- Apply theories an programs.

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Mongolian University of Science and Technology
Curriculum development and Registration office

COURSE SYLLABUS			
Course Title	Control Technique with Microcontrollers		
Course Code	CT	**No. of Credits**	3
Department			
Pre-requisites Code			
Course coordina			

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SMARTCITY Innovative Approach Towards a Master Program on Smart Cities Technologies

Mongolian University of Science and Technology
Curriculum development and Registration office

COURSE SYLLABUS			
Course title	Microprocessor - based Automation System		
Course Code	MA	**Lecture credit**	3
Department		**School**	MUST
Pre-requisites course code	None	**Co-requisites Course code**	
Primary instructor	Luubaatar.B		
E-mail address	luubaatar@must.edu.mn	**Phone number**	8611 1177
Other instructors			
Learning Hours	Total: 144 Learning hours (2:2:0:5) Lecture(32 hr), Seminar(32 hr), Assessment (80 hr)		
Course type	☑ Compulsory ☐Elective ☐ Selected elective ☐ Other		
Offer in Academic Year	☑ 1st Semester ☑ 2nd Semester ☐ Summer ☐ Year Long		
Introduction language	Mongolian or English		

AIMS AND OBJECTIVES:

- Understand structure of 32 bit microcontroller (structure of microcontroller)
- Program microcontroller in C and Assembler (program microcontroller)
- Analyze program structure for microcontroller (analyze a code)
- Evaluate microcontroller based systems performance based on program structure and hardware structure
- Detect bugs of program and prevent from creating bugs.
- Implement microcontroller based system ()
- Apply control theory and implement it on microcontroller

ESSENTIAL READINGS: (Textbooks, journals, website addresses etc)

BIBLIOGRAPHY

- Joseph Yiu, **THE DEFINITIVE GUIDE TO THE ARM® CORTEX-M3**
- Norman S. Nice **CONTROL SYSTEMS ENGINEERING** 6th edition

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SMARTCITY Innovative Approach Towards a Master Program on Smart Cities Technologies

Mongolian University of Science and Technology
Curriculum development and Registration office

COURSE SYLLABUS			
Course Title	Digital Signal Processing		
Course code	F.EE703	**No. of Credits**	3
Department	Communication	**School**	SICT of MUST
Pre-requisites Course Code	None	**Co-requisites Course code**	None
Course coordinator	Erdenebayar.L	**Room number**	212
Email	erdenebayar.l@must.edu.mn	**Telephone No.**	91008480
Other Instructor(s)	None		
Learning Hours	Total: 144 Learning hours (2:2:0:5) Lecture(32 hr), Seminar(16 hr), Laboratory(16 hr), Assessment(80 hr)		
Course type	☑ Compulsory ☐Elective ☐ Selected elective ☐ Other		
Offer in Academic Year	☑ 1st Semester ☑ 2nd Semester ☐ Summer ☐ Year Long		
Introduction language	Mongolian or English		

AIMS AND OBJECTIVES:

- The course aims to introduce concepts and methods of DSP.
- It describe's discrete signals and systems and their applications.
- Generate various discrete time signal sequences and perform simple operations to process signal sequence
- The course covers discrete-time convolution, difference equations, the z-transform and the discrete Fourier transform.
- Designing of both recursive and non-recursive digital filters.
- The use of MATLAB and Simulink for examples and reinforcement of comprehension is essential part of the course.

ESSENTIAL READINGS: (Journals, textbooks, website addresses etc.)

BIBLIOGRAPHY:

- Oppenheim, Alan V. and Schafer, Ronald W. and Buck, John R., Discrete-Time Signal Processing, 2nd edition, Prentice-Hall, 1999, ISBN: 978-0-137-54920-7.
- Proakis, John G. and Manolakis, Dimitris G., Digital Signal Processing, 4th edition, Prentice-Hall International, 2006, ISBN: 978-0-131-87374-2.
- Hayes, Monson H. Digital signal processing Tata McGraw-Hill edition 2004

COURSE DESCRIPTION

Co-funded by the Erasmus+ Programme of the European Union

SMARTCITY Innovative Approach Towards a Master Program on Smart Cities Technologies

Mongolian University of Science and Technology
Curriculum development and Registration office

COURSE SYLLABUS			
Course name	Semiconductor Integrated Circuit Technology		
Course code	F.EE702	**Course credit**	3
Department	Electronics	**School**	SICT
Pre-requisites Course Code	None	**Co-requisites Course code**	None
Primary instructor	Zagarzusem Khurelbaatar	**Room number**	220
E-mail address	zagarzusem@must.edu.mn	**Phone number**	-
Other instructors	None		

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SMARTCITY Innovative Approach Towards a Master Program on Smart Cities Technologies

Mongolian University of Science and Technology
Curriculum development and Registration office

COURSE SYLLABUS			
Course Title	Fundamental of Smart City		
Course Code		**No. of Credits**	3
Department		**School**	MUST
Pre-requisites Course Code	none	**Co-requisites Course Code**	
Course coordinator	G.Zorig	**Room number**	
Email	gzorig@gmail.com	**Telephone No.**	
Other Instructor(s)			
Learning Hours	Total: . . . Learning hours (2:1:1:5) Lecture (. . hr), Seminar (. . hr), Field trip(. . hr), (. . hr)		
Course Type	☑ Compulsory ☐Elective ☐Selected elective ☐Other		
Offer in Academic Year	☐1st Semester ☑2nd Semester ☐Summer ☐Year Long		
Introduction language	Mongolian or English		

AIMS AND OBJECTIVES:

- Prepare the professionals on Smarts City project management
- Practical knowledge of Hardware Infrastructure of Smarts City
- Design and Planning skills of Future City

ESSENTIAL READINGS: (Journals, textbooks, website addresses etc.)

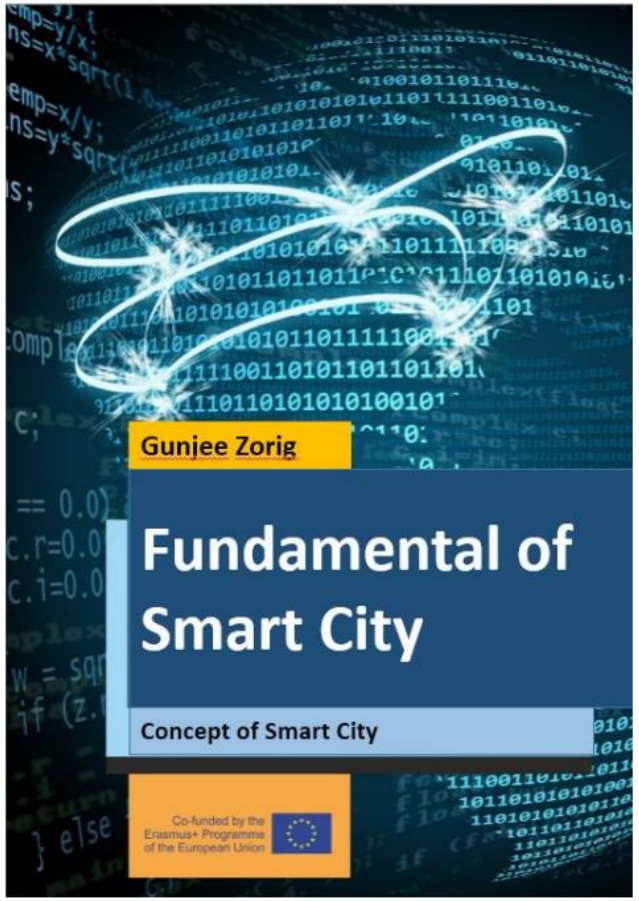
BIBLIOGRAPHY:

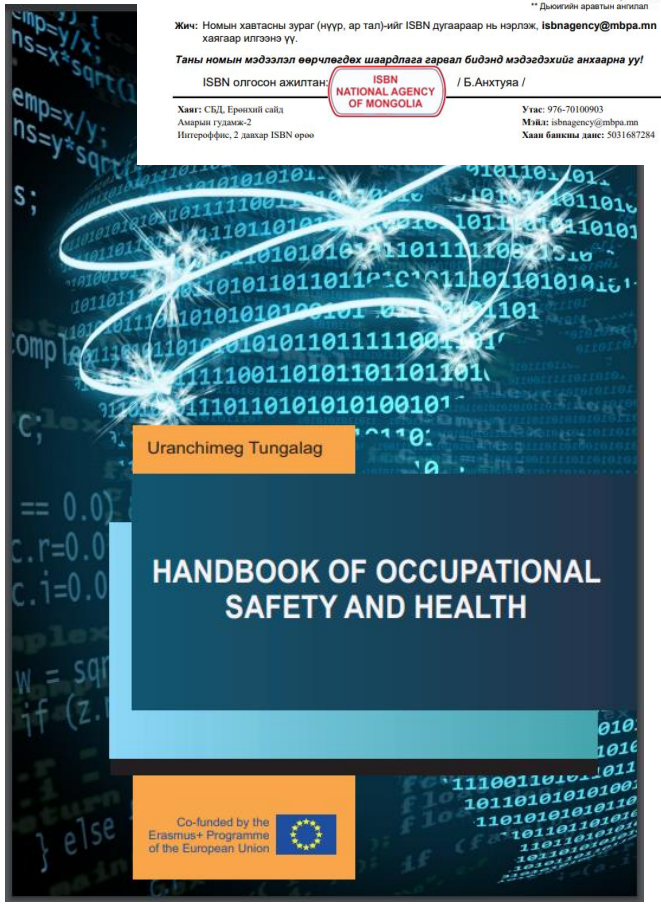
- M.Barlow and C. Levy-Bencheton. Smart Cities, Smart Future: Showcasing Tomorrow
- Townsend Smart Cities: Big Data, Civic Hackers, and the Quest for a New Utopia
- Gassmann, J.Böhm Smart Cities: Introducing Digital Innovation to Cities
- Smart Ulaanbaatar Program

COURSE DESCRIPTION:

Results

D 3.2. Teaching materials and training guide developed





isbn

ISBN
Үндэсний агентлаг

Хэвлэн нийтлэгч: **ШУТИС-д олгосон номын дугаар (ISBN)**

2021/11/04

Д/д	ISBN	Номын нэр	ННА*	ДАА**	Зохиогчийн тэмдэгт
1	**978-9919-506-39-1**	Guide for Modern Methods of Training	74.58	378	T-72
2					
3					

* Номын сангийн номзүйн ангилал
** Дьюигийн аравтын ангилал

Жич: Номын хавтасны зураг (нүүр, ар тал)-ийг ISBN дугаараар нь нэрлэж, **isbnagency@mbpa.mn** хаягаар илгээнэ үү.

Таны номын мэдээлэл өөрчлөгдөх шаардлага гарвал бидэнд мэдэгдэхийг анхаарна уу!

ISBN олгосон ажилтан: ISBN NATIONAL AGENCY OF MONGOLIA / Б.Анхтуяа /

Хаяг: СБД, Ерөнхий сайд Амарын гудамж-2 Интерөффис, 2 давхар ISBN ороо

Утас: 976-70100903
Мэйл: isbnagency@mbpa.mn
Хаан банкны данс: 5031687284

Double Degree Master Program

D 3.1. Skills upgraded and methodological support of the teaching process is ensured

Download Cascade Training:

CT1-3.2-CascadeTrainingReport-MUST.Teachers

Download Cascade Training:

CT2-3.2 Cascade training teacher's-2

Download Cascade Training:

CT-3.2 Cascade training teacher's

Download Cascade Training:

CT-3.4 Cascade Training Report- W.P3.4-MUST-Novosibirsk

Download Cascade Training:

CT-3.4 Cascade Training Report - W.P 3.4-MUST-Almaty

Summer School "Smart City Today and Tomorrow" at Novosibirsk State Technical University, Novosibirsk, Russian Federation, July 1-5, 2019

Summer School – 26-30 April, 2021 "Smart University is the foundation for a Smart City"

Al-Farabi Kazakh National University, Almaty, Kazakhstan

Summer School:

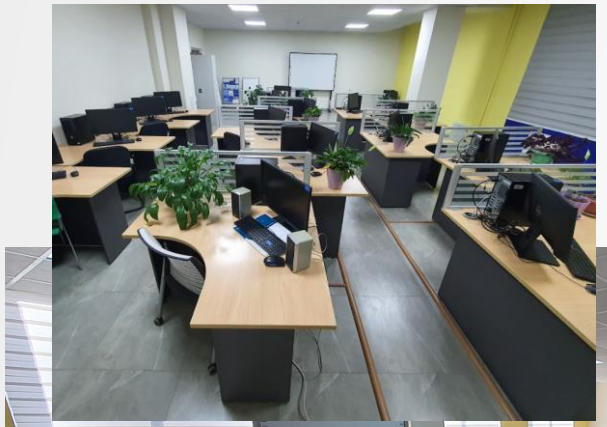
25-29 October, 2021

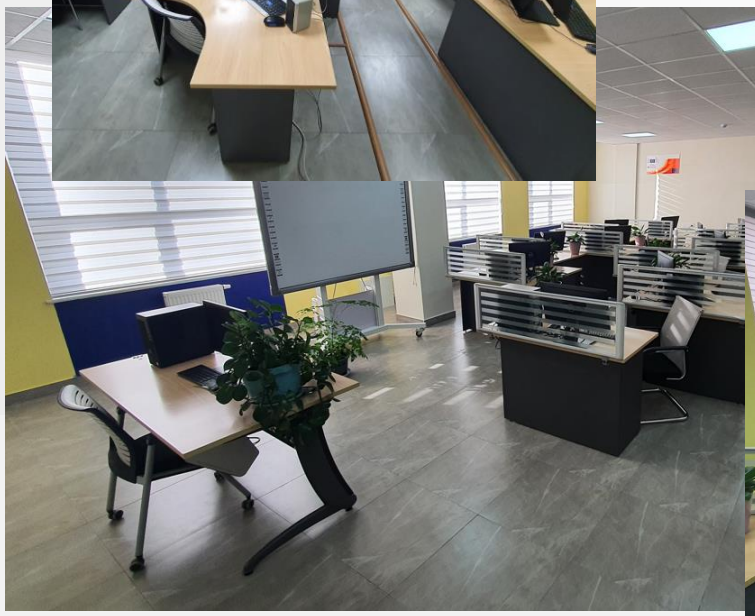
Mongolian University of Science and Technology & National University of Mongolia, Ulaanbaatar, Mongolia

Summer School:
25-29 October, 2021
Mongolian University of Science and Technology & National University of Mongolia, Ulaanbaatar, Mongolia

Double Degree Master Program

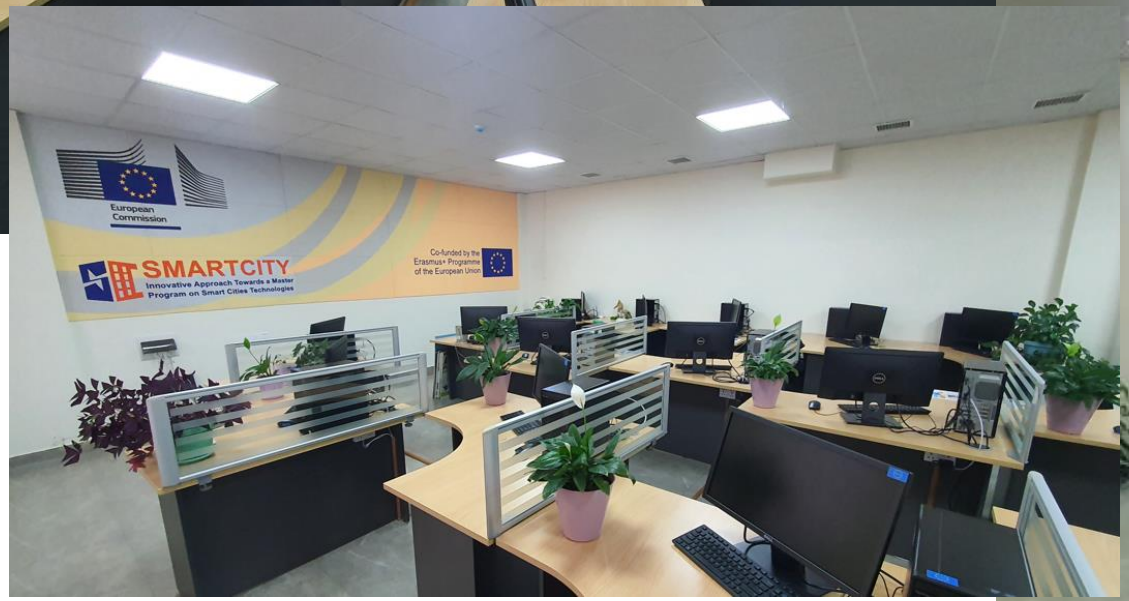
WP.5.3. Open Research Laboratory:
Smart city technologies
Professor's team:
Smart engineering system design
Location: Room 701, Research and Innovation Center building, Graduate School of Engineering, MUST





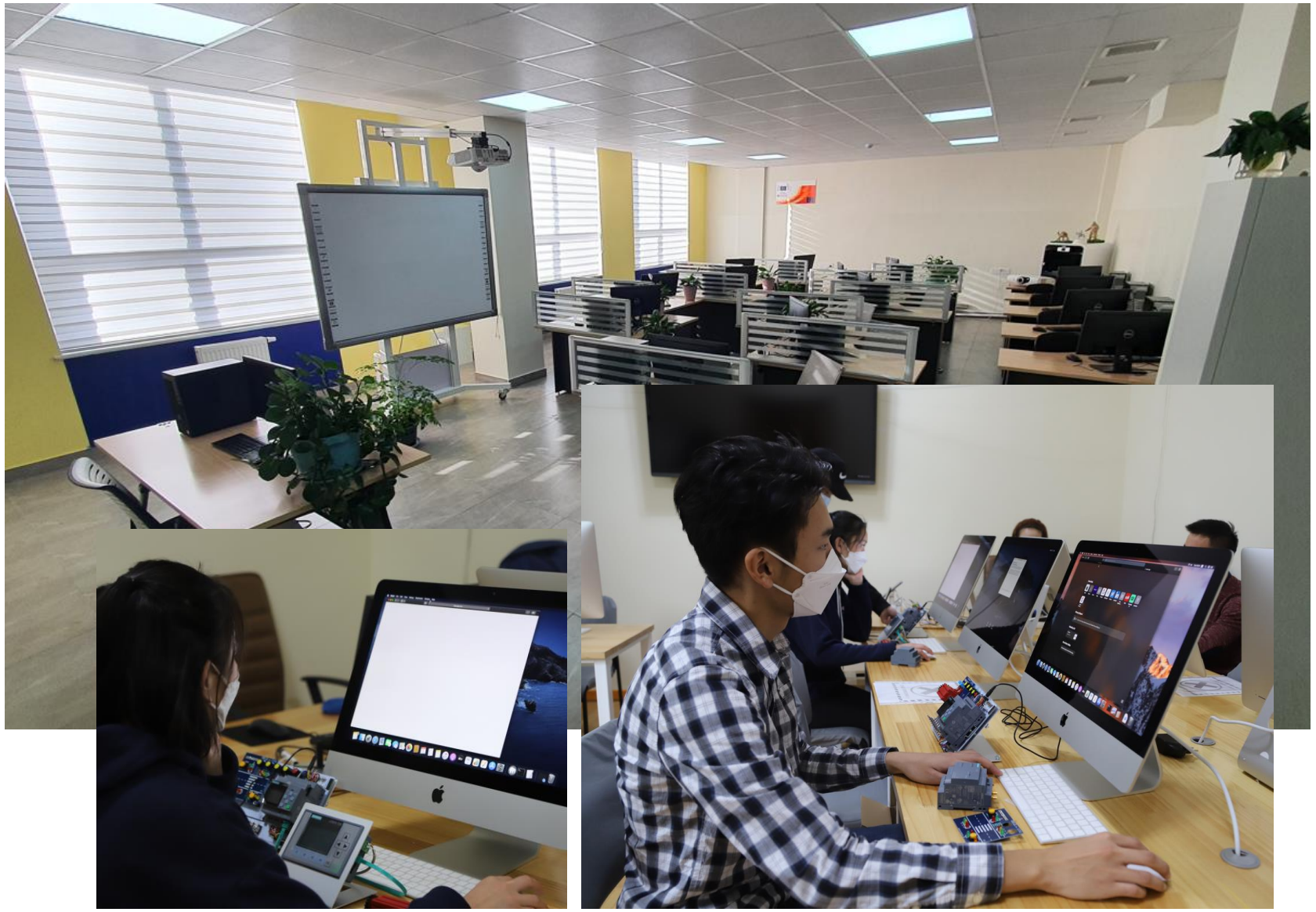
Results

WP.5.3. Open research laboratory: “Smart city technologies”



Results

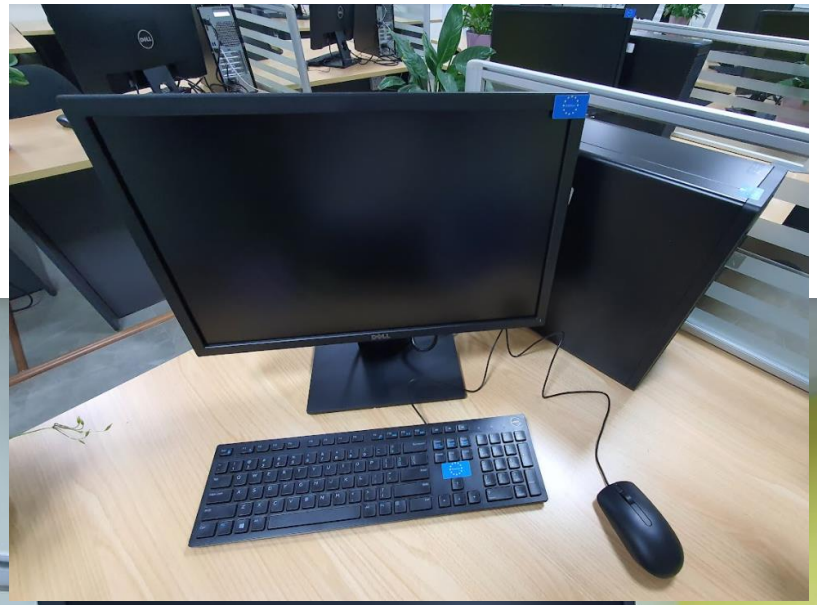
WP.5.3. Open research laboratory: “Smart city technologies”

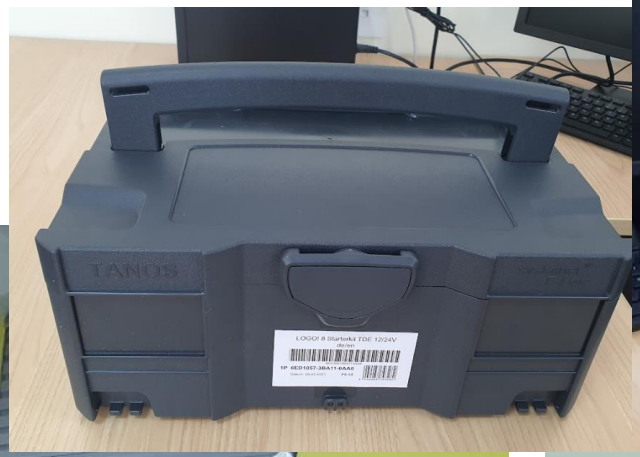


Location: Room 701, Research and Innovation Center building, Graduate School of Engineering, MUST

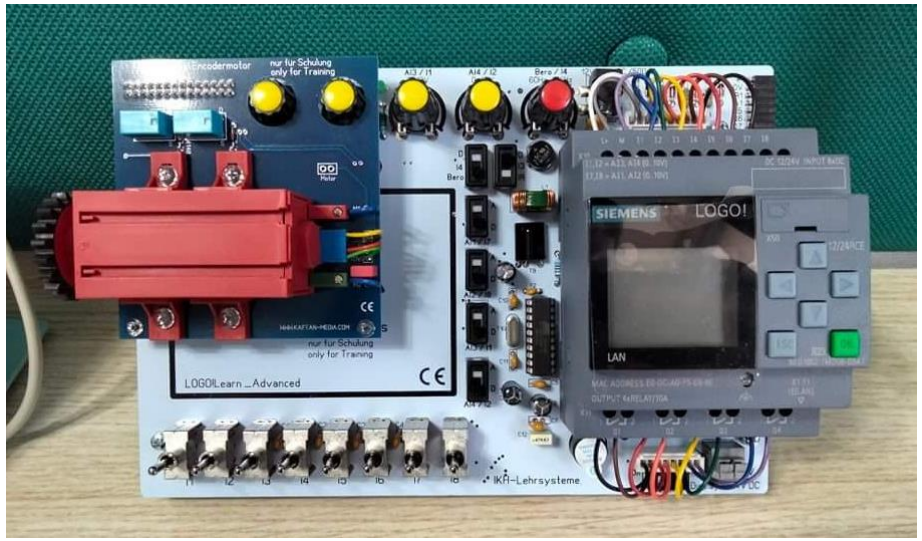
Results

WP.5.3. Open research laboratory: “Smart city technologies”



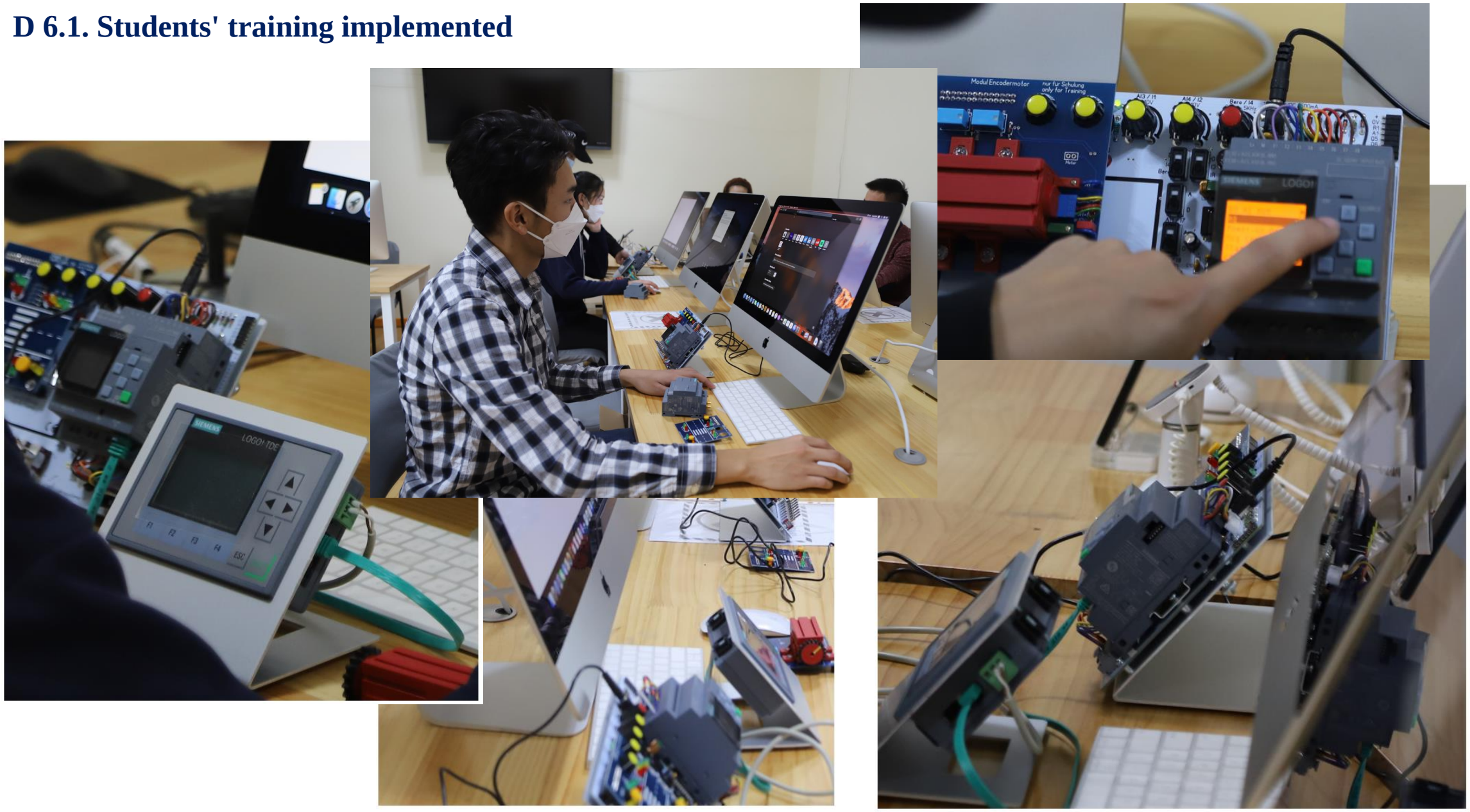


WP.5.3. Open research laboratory: “Smart city technologies”



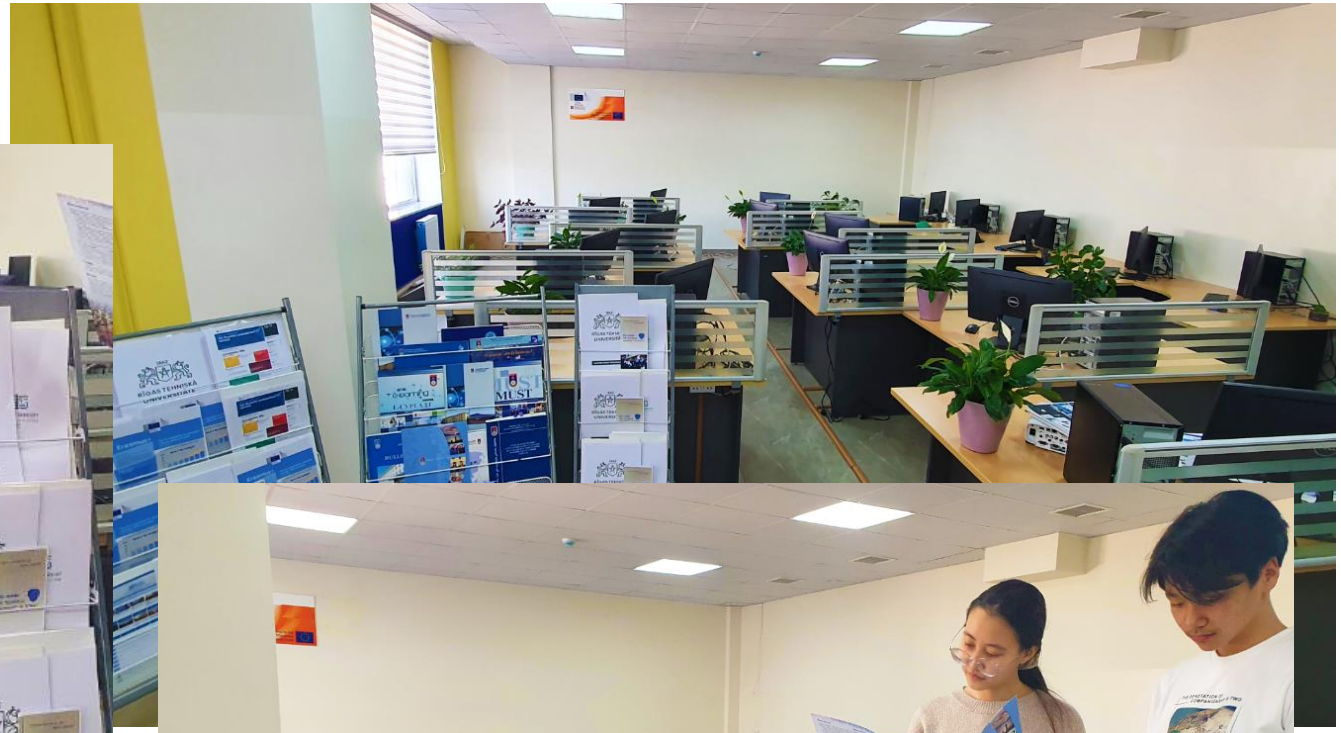
Results

D 6.1. Students' training implemented



Results

8.7. Center of Excellence in SCT

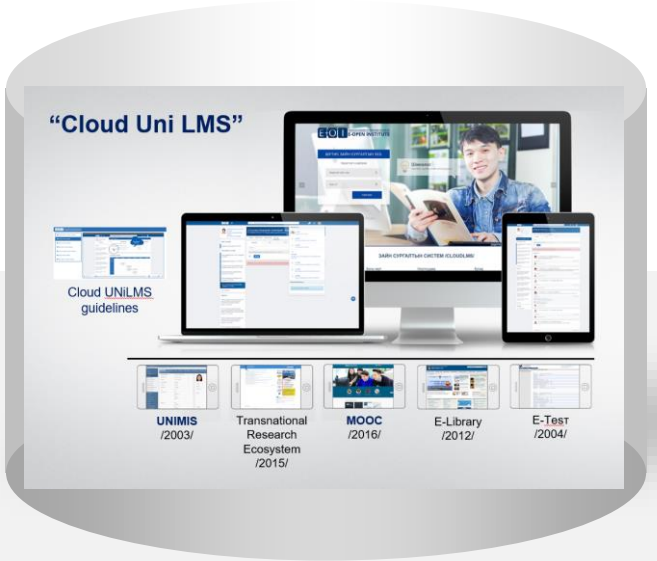


Virtual Excellence Center: **www.smartcity.edu.mn**

Double Degree Master Program

D 5.1. PC universities staff upgraded in e-learning and new technologies

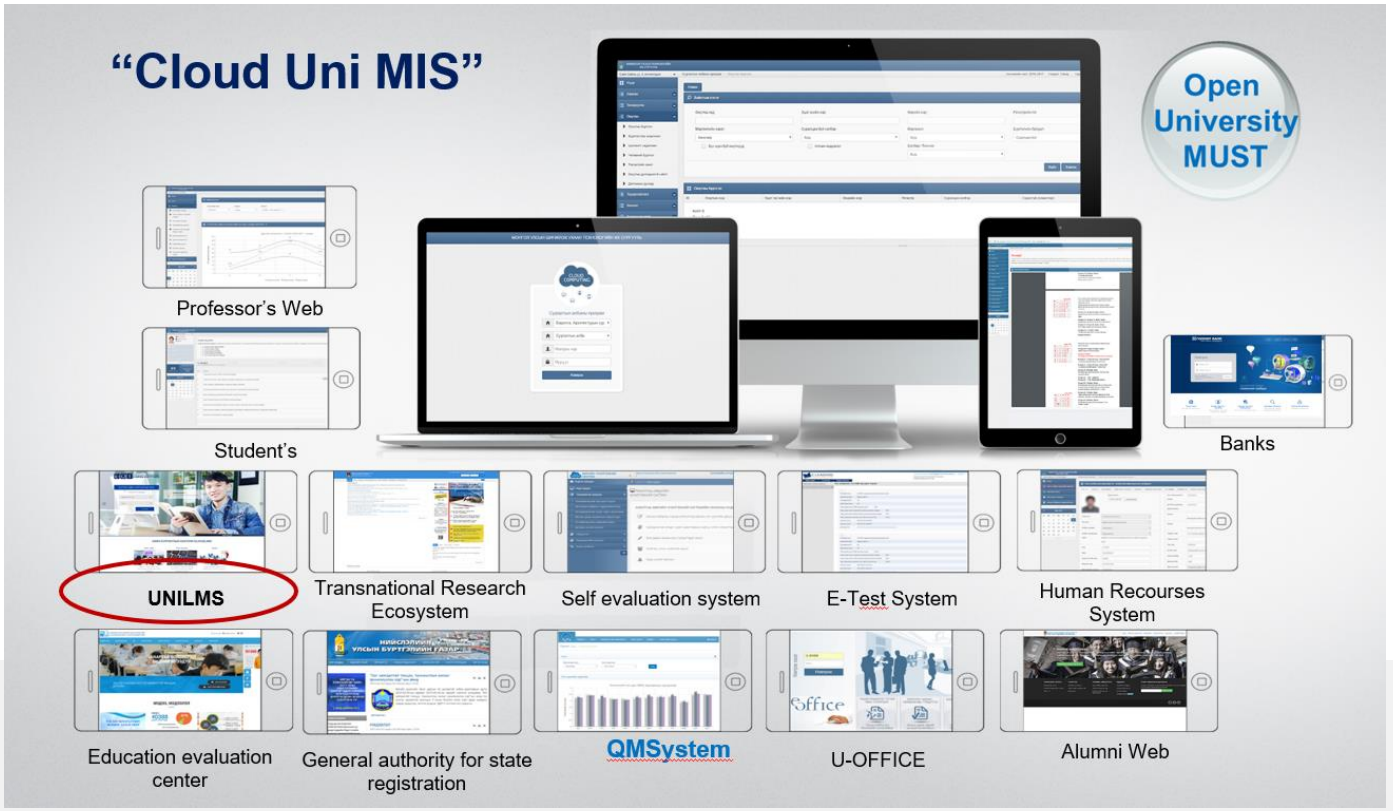
D 5.2. IHLS in operation, equipped (an innovative approach to teaching includes web-portal, remote/virtual labs, e-learning, access to the EU databases)

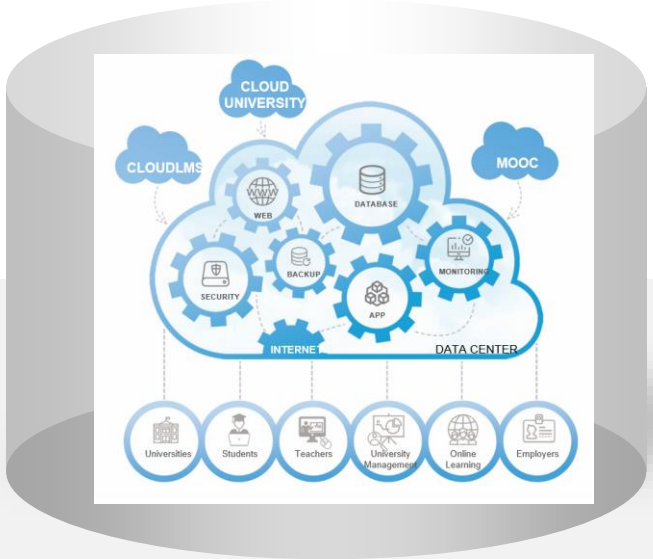


Double Degree Master Program

WP.1: 1.2	WP.2: 2.2	WP.3: 3.2, 3.4	WP.4: 4.1, 4.3	WP.5: 5.2, 5.3	WP.6: 6.1,2,3,4

D 6.1. Students' training implemented



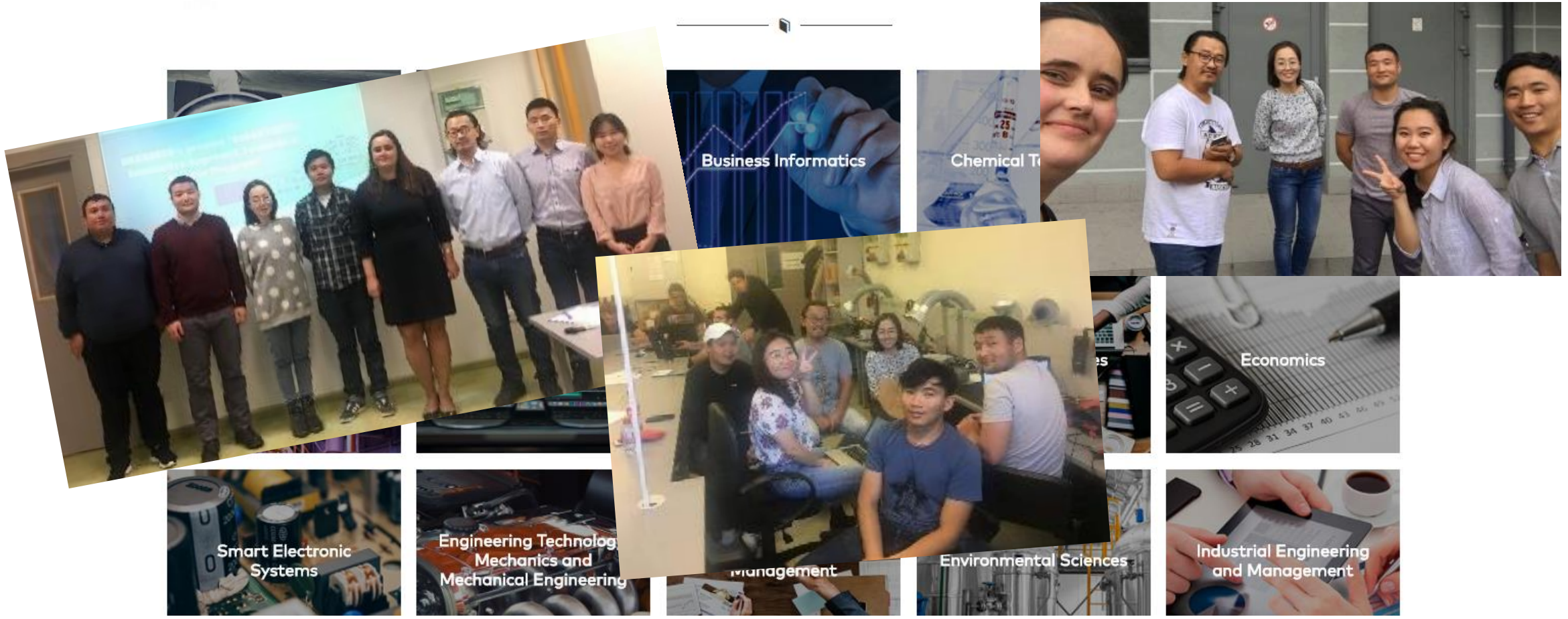


1862 RIGA TECHNICAL UNIVERSITY

DDMP on SCT /2019-2020 Academic Year/

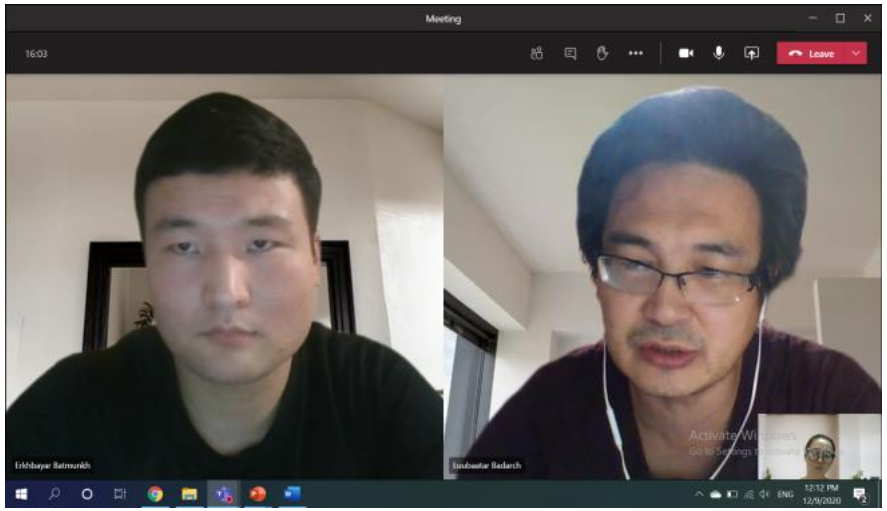
UNIVERSITY | DEGREE STUDIES | EXCHANGE STUDIES | SHORT-TERM STUDIES | PRACTICAL MATTERS | CONTACT US | ALUMNI

MASTER STUDY PROGRAMMES IN ENGLISH



МОНГОЛ УЛСЫН ШИНЖЛЭХ УХААН ТЕХНОЛОГИЙН ИХ СУРГУУЛЬ
MONGOLIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY

DDMP on SCT /2020-2021 Academic Year/



Double Degree Master Program

ECTS	Credit, Grade transfer list	Confirmation of credit transfer list UNIMIS, UNILMS
ECTS	Academic transcript /GPA/	Confirmation of academic transcript Program Committee GSE & SICT Program Committee of MUST Academic Council of MUST **Board Meeting**
	International research conference Ulaanbaatar, Mongolia 07 May 2021	• "Best paper awards-2021" Conference of Master and PhD students • IEEE Electronic Publication Agreement Receipt
	Master defense Ulaanbaatar, Mongolia Riga, Latvia 17 June 2021	MUST Database, Main library of MUST Master Thesis: Tenuun.D, "Charging and discharging electrochemical battery in residential energy storage" Batmunkh.E, "Development of robot test-bench with different control systems" Bilguun.G, "Automated trash bin development for Intelligent Waste Management System in Smart Cities"

D 4.1. PC universities staff upgraded in quality assurance

D 4.2. QAS and user guide developed

D 4.3.QAS in operation

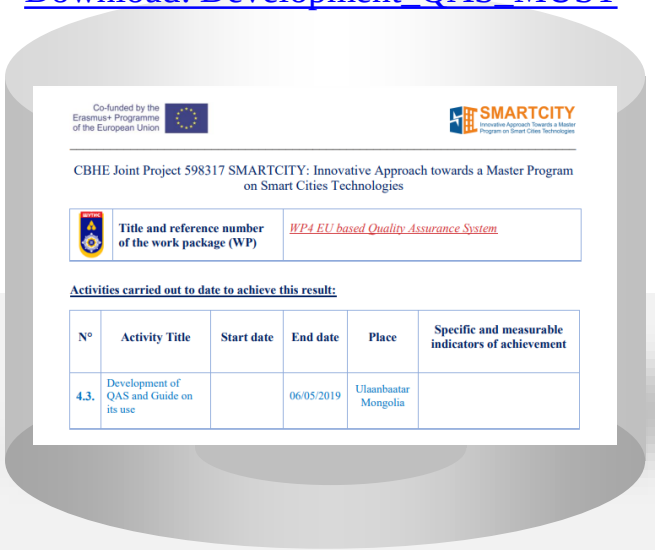
Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG)

Accreditation with ASIIN - Degree Programmes, Institutions and Systems

MNCEA: Mongolian National Council for Education Accreditation

http://www.smartcity.edu.mn/Documents

Download: Development_QAS_MUST



Co-funded by the Erasmus+ Programme of the European Union

SMARTCITY

CBHE Joint Project 598317 SMARTCITY: Innovative Approach towards a Master Program on Smart Cities Technologies

Title and reference number of the work package (WP)	*WP4 EU based Quality Assurance System*

Activities carried out to date to achieve this result:

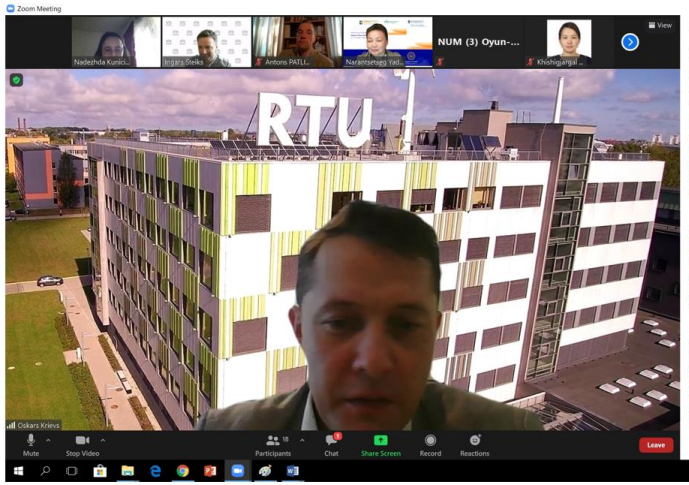
N°	Activity Title	Start date	End date	Place	Specific and measurable indicators of achievement
4.3.	Development of QAS and Guide on its use		06/05/2019	Ulaanbaatar Mongolia	

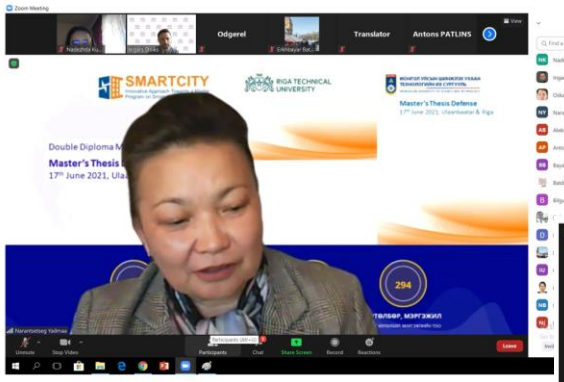
Results

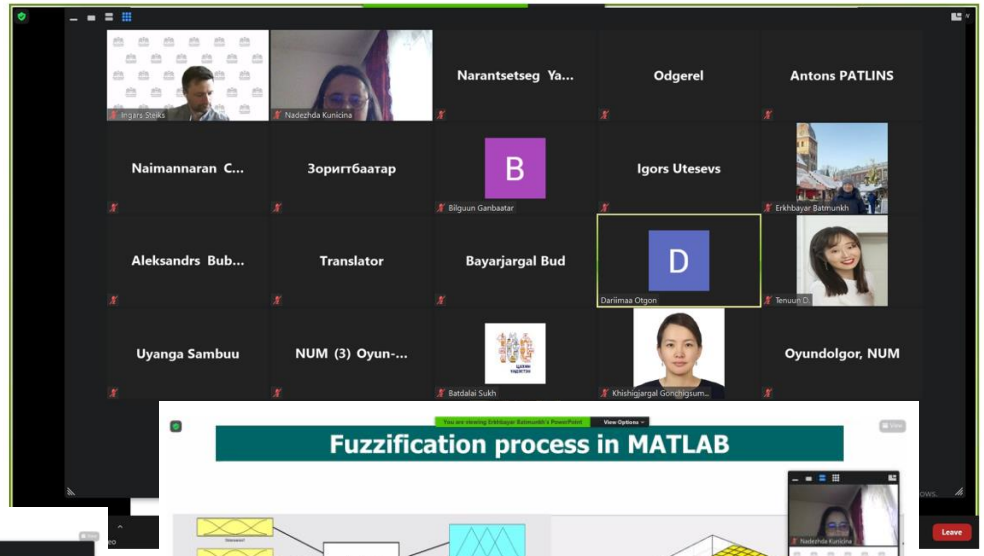
D 6.1. Students' training implemented

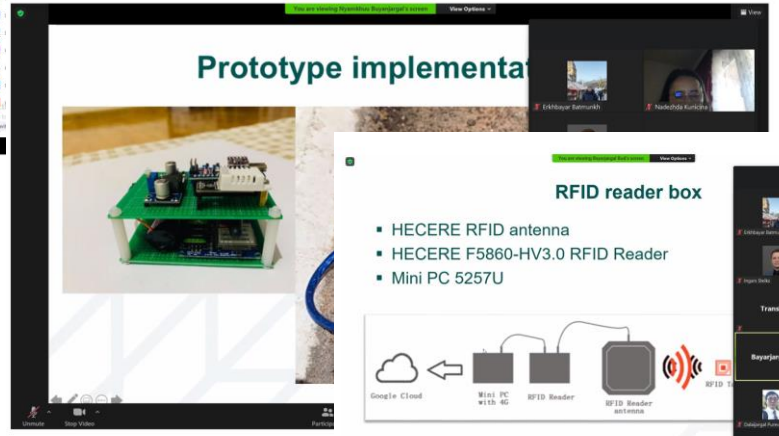
Master's Thesis Defense

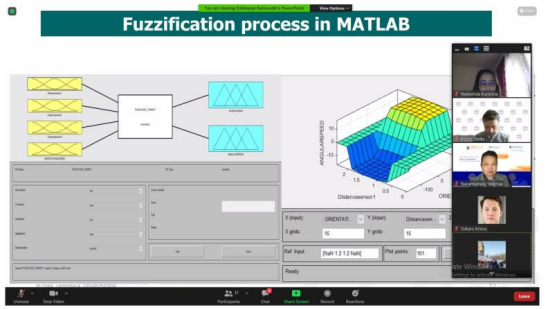
17th June 2021, Ulaanbaatar & Riga

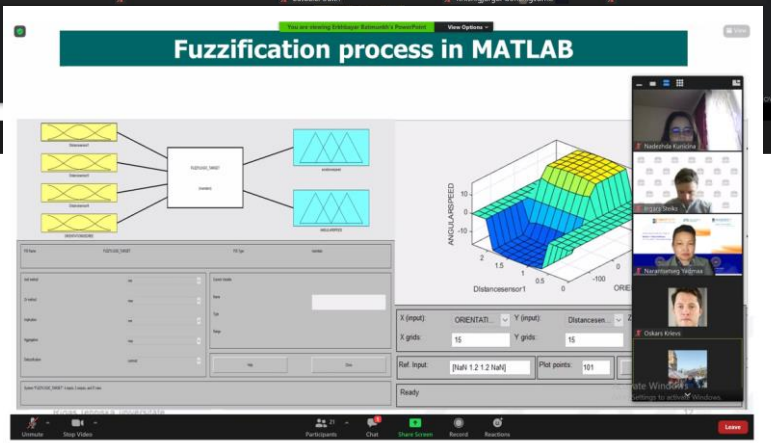












Results

D 6.1. Students' training implemented

RĪGAS TEHNISKĀ
UNIVERSITĀTE

RTU

MAĢISTRA

DIPLOMS

Sērija MDE
Nr. 4785 *

Ar Elektrotehnikas un vides inženierzinātņu fakultātes
domes 2021. gada 29.jūnija lēmumu Nr. 124
According to decision No. 124, June 29, 2021, made by
the Council of the Faculty of Electrical and Environmental Engineering

Bilguun Ganbaatar
personas kods / personal ID number
327057-52402

ieguvis

inženierzinātņu
MAĢISTRA GRĀDU
elektrozinātnē

is awarded

MASTER DEGREE
of Engineering Sciences
in Electrical Science

Rektors /Rector Leonīds Ribickis

Enerģētikas un elektrotehnikas fakultātes domes priekšsēdētājs / Council Chairman of the Faculty of Electrical and Environmental Engineering Oskars Krievs

Rīgā
2021. gada 9.jūlijā
Reģistrācijas Nr. 020-251

Riga
July 9, 2021
Registration No. 020-251

Ar Elektrotehnikas un vides inženierzinātņu fakultātes
domes 2021. gada 29.jūnija lēmumu Nr. 124
ccording to decision No. 124, June 29, 2021, made by
cil of the Faculty of Electrical and Environmental Engineering

Erkhbayar Batmunkh
personas kods / personal ID number
327568-00072

ieguvis

inženierzinātņu
MAĢISTRA GRĀDU
elektrozinātnē

is awarded

MASTER DEGREE
of Engineering Sciences
in Electrical Science

s /Rector Leonīds Ribickis

tikas un elektrotehnikas
ites domes priekšsēdētājs /
il Chairman of the Faculty of
cal and Environmental
ering Oskars Krievs

īgā
021. gada 9.jūlijā
eģistrācijas Nr. 020-247

Riga
July 9, 2021
Registration No. 020-247

ktrotehnikas un vides inženierzinātņu fakultātes
omes 2021. gada 29.jūnija lēmumu Nr. 124
ding to decision No. 124, June 29, 2021, made by
the Faculty of Electrical and Environmental Engineering

Tenuun Dovdon
ersonas kods / personal ID number
326285-35585

ieguvusi

inženierzinātņu
MAĢISTRA GRĀDU
elektrozinātnē

is awarded

MASTER DEGREE
of Engineering Sciences
in Electrical Science

ctor Leonīds Ribickis

un elektrotehnikas
domes priekšsēdētājs /
airman of the Faculty of
and Environmental
Oskars Krievs

gada 9.jūlijā
ācijas Nr. 020-250

Riga
July 9, 2021
Registration No. 020-250

Results

D 6.1. Students' training implemented

Results

D 6.1. Students' training implemented

MONGOLIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY

MASTER DEGREE DIPLOMA

No. E 20215086

THIS IS TO CERTIFY THAT

GANBAATAR BILGUUN

WAS AWARDED THE DOUBLE DEGREE OF

MASTER OF SCIENCE
IN ELECTRONICS

ON JUNE 28, 2021.

GRADE POINT AVERAGE (GPA)

TOTAL CREDITS

G.GANBAYAR
Chairman of the Governing Board

B.OCHIRBAT Professor, Ph.D
President

MONGOLIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY

MONGOLIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF INFORMATION AND COMMUNICATION TECHNOLOGY

ACADEMIC TRANSCRIPTS (invalid without diploma)

Surname:	GANBAATAR	Program Index:	E07140101	Diploma number:	E20215086
Given name:	BILGUUN	Program:	ELECTRONIC		
Date of Birth:	1992-05-08	Specialization:	Smart city technologies		

Defended his master degree thesis on the topic: "Automated trash bin development for Intelligent Waste Management System in Smart Cities" with the grade "B+"

I. COURSES		Cr	Grade
1	INTRODUCTION TO OCCUPATIONAL SAFETY	1	A
2	MICROPROCESSORS BASED AUTOMATION SYSTEM	3	A-
3	CONTROL TECHNIQUE WITH MICROPROCESSOR CONTROLLERS	3	A
4	AUTOMATED ELECTRICAL DRIVE	3	A-
5	DESIGN OF POWER ELECTRONICS SYSTEMS	3	B+
6	ELEMENTS OF AUTOMATICS	9	B+
7	THE CONTROL SYSTEMS OF POWER ELECTRONICS EQUIPMENT	5	A-
8	COMMUTATED CONVERTERS	5	A-
9	INDUSTRIAL FREQUENCY CONVERTERS AND INVERTERS	2	B-
10	THEORY OF ELECTRONIC CONVERTERS OF ELECTRICAL ENERGY	4	A-
11	SIMULATION OF ELECTRICAL PROCESSES	5	A-
12	INDUSTRIAL RELATIONS	2	A
13	SEMICONDUCTOR IC TECHNOLOGY	3	B
14	DIGITAL SIGNAL PROCESSING	3	B-
15	ELECTRO-MAGNETIC COMPATIBILITY IN INDUSTRIAL ELECTRONIC EQUIPMENT	2	B-
16	FUNDAMENTAL OF SMART CITY	2	A
17	ENTREPRENEURSHIP PLANNING AND SMART CITIES	2	A
18	INTERNSHIP: SMART CITY AND ICT	3	A
19	INNOVATIVE PRODUCT DEVELOPMENT AND ENTREPRENEURSHIP	4	A-
20	MASTER'S THESIS	5	B+

II. ADDITIONAL COURSES	Cr	Grade

Grade Point Average (GPA) 3.55
Total Credits 69

Double degree Master program of the Mongolian University of Science Technology & Riga Technical University, Latvia

B.OCHIRBAT Professor, Ph.D
PRESIDENT
MONGOLIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY

Date: June 28, 2021

Grade points per unit: A(4.0), A-(3.7), B+(3.4), B(3.0), B-(2.7), C+(2.4), C(2.0), C-(1.7), D+(1.3), D(1.0), D-(0.7), F(0), CR

Results

D 6.1. Students' training implemented

11-314085 eoi@must.edu.mn

SMARTCITY
INNOVATIVE APPROACH TOWARDS A MASTER PROGRAM ON SMART CITIES TECHNOLOGIES

SMARTCITY
Innovative Approach Towards a Master Program on Smart Cities Technologies

Co-Funded by the Erasmus+ Programme of the European Union

HOME PROJECT PARTNERS PERSONALITIES DOCUMENTS EVENTS MONTHLY NEWSLETTERS CONTACT

www.smartcity.edu.mn

Results

www.smartcity.edu.mn

Results

8.7. Virtual Excellence Center

European and Partners Universities

RIGA TECHNICAL UNIVERSITY | ENGINEERING CENTER IN THE BALTICS
ТЕХНИЧЕСКИ УНИВЕРСИТЕТ-СОФИЯ
TECHNISCHE UNIVERSITÄT CHEMNITZ
INTERNATIONAL HELLENIC UNIVERSITY
AL-FARABI KAZAKH NATIONAL UNIVERSITY
ENU.KZ | L.N. GUMILYOV EURASIAN NATIONAL UNIVERSITY
YURI GAGARIN STATE TECHNICAL UNIVERSITY OF SARATOV
НОВОСИБИРСКИЙ ГОСУДАРСТВЕННЫЙ ТЕХНИЧЕСКИЙ УНИВЕРСИТЕТ
NATIONAL UNIVERSITY OF MONGOLIA
MONGOLIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY

I. Quality assurance-European Higher Education

II. European and Partner Universities

III. Smart Ulaanbaatar City

BALTICS

I. Quality assurance-European Higher Education

II. European and Partner Universities

III. Smart Ulaanbaatar City

SMART ULAANBAATAR PROGRAM

brief introduction

OF ENGINEERING, MONGOLIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY

SMARTCITY
Innovative Approach Towards a Master Program on Smart Cities Technologies

MONGOLIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY
МОНГОЛ УЛСЫН ШИНЖЛЭХ УХААН ТЕХНОЛОГИЙН ИХ СУРГУУЛЬ

Co-funded by the Erasmus+ Programme of the European Union

Virtual Excellence Center

TECHNICAL UNIVERSITY OF SOFIA
75 YEARS

САРАТОВСКИЙ ГОСУДАРСТВЕННЫЙ ТЕХНИЧЕСКИЙ УНИВЕРСИТЕТ

NOVOSIBIRSK STATE TECHNICAL UNIVERSITY
DOCENDO DISCIMUS
NSTU
1950

ҚАЗАҚ ҰЛТТЫҚ УНИВЕРСИТЕТІ
85 ЖЫЛ

NATIONAL UNIVERSITY OF MONGOLIA
1942

1862
RIGA TECHNICAL UNIVERSITY

UNIVERSITY OF TECHNOLOGY
IN THE EUROPEAN CAPITAL OF CULTURE
CHEMNITZ

INTERNATIONAL HELLENIC UNIVERSITY

25 EURASIAN NATIONAL UNIVERSITY
L.N. GUMILYOV EURASIAN NATIONAL UNIVERSITY
Founded in 1996