



MEMORANDUM of AGREEMENT – MoA

Double Degree Master

between

Universitas Gadjah Mada (Yogyakarta, Indonesia)

and

IMT Atlantique (France)

This Memorandum of Agreement falls within the framework of the Memorandum of Understanding between the Universitas Gadjah Mada, hereafter referred to as UGM, and IMT Atlantique, Elite Graduate Engineering School of the Institute Mines-Telecom (“Ecole nationale supérieure Mines Telecom Atlantique Bretagne Pays de la Loire”) hereafter referred to as IMT Atlantique.

IMT Atlantique has 3 campuses :

- Brest (Technopôle Brest-Irsoise- CS 83818 – 29238 Brest cedex 03),
- Nantes (La Chantrerie – 4 rue A. Kastler – CS 20722 – 44307 Nantes cedex 3),
- Rennes (2 rue de la Châtaigneraie – CS 17607 – 35576 Cesson Sévigné cedex).

Article 1. Purpose of the MoA

The purpose of this Memorandum of Agreement is to develop exchanges of students that will lead to the award of degrees of both institutions:

- The Master of Engineering in Engineering Physics – Universitas Gadjah Mada
- The Master of Science in Sustainable Nuclear Engineering: Applications and Management - SNEAM - IMT Atlantique

under the conditions specified hereafter.

Article 2. Participating Bodies

The participating bodies will be UGM and IMT Atlantique

The following liaison officers will be primary point of contact and persons responsible for the collaborative discussions:



For UGM
Dr.-Ing. Singgih Hawibowo, Head of Master Program in Engineering Physics

For IMT Atlantique
Dr Annya Réquillé, Dean of International Graduate School – Nantes Campus

Article 3. Fields of study

All fields of study at each institution are potentially covered by this agreement. However, the compatibility of the respective programs must be confirmed and the programs and study paths on both sides approved prior to implementation in a particular domain.

Article 4. Program structure for students from UGM

Double degree :

From UGM : Master of Engineering in Engineering Physics,
From IMT Atlantique : Master of Science in Sustainable Nuclear Engineering : Applications and Management - SNEAM - IMT Atlantique. This program takes place in Nantes.

- The program structure and conditions of attribution of the double degree are as follows:

IMT Atlantique - France		UGM - Indonesia		UGM - Indonesia
Year 1		Year 2		Year 3
Sem 1*	Sem 2	Sem 1	Sem 2	Sem 1
Mid July – End Jan	Beg Feb – mid Jul	Aug - Jan	Feb - Jul	Aug - Jan
Master program year 1 sem 1	Master program year 1 sem 2	Master program year 2 sem 1	Master program year 2 sem 2	Master Thesis
60 ECTS		28 – 34 Credits		

The double is awarded after:

- Successful completion of the 1st year of Master at IMT Atlantique and
- Successful completion of the 2nd year of Master at UGM and a Master thesis which meets the relevant requirements for degree-conferring.

Intensive and Extensive French Language and Culture courses are provided for students throughout their period of study in IMT Atlantique during the 1st year of master.



Or

UGM - Indonesia	UGM - Indonesia		IMT Atlantique - France	
Year 1	Year 2		Year 3	
Sem 2	Sem 1	Sem 2	Sem 1	Sem 2
Feb - Jul	Aug - Jan	Feb - Jul	Mid July – End Jan	Beg Feb – mid Jul
Master program Year 1 sem 2	Master program Year 2 sem 1	Master program Year 2 sem 2	Master program Year 2 sem 1	Master Thesis
28 – 34 Credits			60 ECTS	

The double is awarded after:

- Successful completion of the 1st and 2nd year of Master at UGM and
- Successful completion of the 2nd year of Master at IMT Atlantique, with Master thesis which meets the relevant requirements for degree-conferring.

Intensive and Extensive French Language and Culture courses are provided for students throughout their period of study in IMT Atlantique during the 2nd year of master.

For the duration of the double degree program students will be jointly registered at UGM and IMT Atlantique.

The double degree will be delivered after the successful completion of studies in both institutions
The general program of studies is detailed in Appendix 1.

Article 5. Program structure for students from IMT Atlantique

Double degree :

From IMT Atlantique : Master of Science in Engineering in Nuclear or Master of Science in Nuclear

From UGM : Master of Engineering in Engineering Physics,

- The program structure is as follows:

IMT Atlantique - France		UGM - Indonesia		UGM - Indonesia
Year 1		Year 2		Year 3
Sem 1	Sem 2	Sem 1	Sem 2	Sem 1
Sept – End Jan	Beg Feb – Aug	Aug - Jan	Feb - Jul	Aug - Jan
Master program year 1 sem 1	Master program year 1 sem 2	Master program year 2 sem 1	Master program year 2 sem 2	Master Thesis



- Conditions of attribution of the double degree

The double is awarded after:

- Successful completion of the 1st year of Master at IMT Atlantique and
- Successful completion of the 2nd year of Master at UGM and a Master thesis which meets the relevant requirements for degree-conferring.

For the duration of the double degree program students will be jointly registered at UGM and IMT Atlantique.

The double degree will be delivered after the successful completion of studies in both institutions
The general program of studies is detailed in Appendix 1.

Article 6. Arrangement of Academic Conditions

Both institutions mutually recognize the credits that students acquired in the double degree program.

Article 7. Language of Instruction and Thesis

All courses for this double degree program will be delivered in English in both institutions.
Students enrolled in the double degree program are expected to write his/her thesis in English and the thesis must be submitted to both institutions for oral examination.

Article 8. Admission

The students will be pre-selected by UGM or IMT Atlantique based on the excellence of their academic records and will be recommended to IMT Atlantique by UGM or to UGM by IMT Atlantique for admission to the Master program.

The selection process shall then go through an evaluation, by IMT Atlantique or UGM of the candidate's application (with regard to academic level, language ability and candidate's motivation).

The final decision for admission is decided by IMT Atlantique or UGM, subject to its rules and procedures.

Details of the application procedure will be clearly mentioned to the candidates.



Article 9. Costs

i. Participation cost

Double degree :

From UGM : Master of Engineering in Engineering Physics,

From IMT Atlantique: Master of Science in Sustainable Nuclear Engineering: Applications and Management - SNEAM

For UGM students at IMT Atlantique: the registration cost will be defined in an appendix once a year.

For IMT Atlantique students at UGM: the amount of the school fees that will be paid by the students at UGM is: IDR 22,500,000 per semester.

ii. Other costs

Students must cover their own travel and subsistence expenses – housing, food, insurance etc.
UGM and IMT Atlantique will clearly mentioned the living cost expenses and the facilities on campus.

iii. Financial support

UGM and IMT Atlantique will actively seek for funding to cover partially or totally the fees and/or living costs.

Article 10. Annual meetings

The persons responsible for the program at both institutions shall meet at least once a year within the frame of the general agreement of cooperation between the IMT Atlantique and UGM in order to :

- Review effectiveness of the teaching programs
- Examine the academic results achieved by the students in the light of the institutions' joint efforts
- Review the domains and programs able to host students in the frame of the double-degree program
- Review the selection and admissions procedures and criteria
- Decide, each year, the number of students to be admitted to the double degree program.
- Discuss further actions

The meeting may be conducted via teleconference.

Article 11. Effective Date and Length of MoA

The Memorandum of Agreement will remain in force for a period of five years subject to the availability of funds. Any amendment and/or modification of the Memorandum of Agreement will require written



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approval by each partner institution's signing officer for Memorandums of Agreement. After the initial five-year period, this MoA will be renewed automatically unless written notice of termination is given.

Either party reserves the right to terminate this MoA upon six months' written notice to the other party. In this case, the program(s) or the activity(ies) already approved by both parties shall be allowed to be completed under the conditions of this MoA. In such event, the obligations of IMT Atlantique and UGM towards the students, currently enrolled in a Double Degree program, will be carried out under the conditions of the present agreement.

This Memorandum of Understanding will take effect when signed by each side:

On behalf of UGM

Prof. Ir. Panut Mulyono, M.Eng., D.Eng
Dean of Faculty of Engineering UGM

May 10, 2017
Date

On behalf of IMT Atlantique

Ms. Anne Beauval
Vice President of IMT Atlantique

Date 10/05/2017



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APPENDIX 1: Course Structure

This course Structure is approved at the time of the signature.

International Master year 1 – IMT Atlantique (taught in English)

SNEAM	MSc in Sustainable Nuclear Engineering : Applications and Management	Year 1	
		Sem 1	Sem 2
SCIENTIFIC AND TECHNICAL MODULES		European Credit - ECTS	
ST111IR	Physics of Ionizing Radiation	8	
	Nuclear Physics and Radioactivity		
	Radiation/Matter Interaction		
	Ionizing Radiation Detection		
ST212RP	Radioprotection		6
	Principals of radioprotection		
	Work practices		
	Simulation		
ST312RA	Physico-chemistry of Environment		7
	Environment and Radioactivity		
	Introduction to Radiochemistry		
	Detectors and Radiochemical Analyses		
ST412NT	Introduction to Nuclear Technology		4
	Nuclear reactors		
	Accelerators		
	Fuel cycle and nuclear materials		
SOCIAL SCIENCE AND MANAGEMENT MODULES			
SSG11NP	Project Management	8	
	Project Management		
	Intercultural Management		
	International Negotiations		
SSG12NM	Environmental Management and strategy of Sustainability		7
	International Environmental Management		
	Energy Strategies		
	Sustainability Management		
	Risk Analysis		
SCIENTIFIC AND TECHNICAL PROJECT COURSES			
PRI11NP	Integrated Scientific Project	3	
PRI12NP	Integrated Nuclear Engineering Project		3
TRAINING FOR THE CORPORATE WORLD			
FEM11VS	Company visits and seminars 1	1	
FEM12VS	Company visits and seminars 1		1
GENERIC ENGINEERING METHODS			
MGI11DA	Measurement and Data Analysis	8	
FOREIGN LANGUAGES			
LVI11FL	French language and Culture	2	
LVI12FL	French language and Culture		2



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International Master year 2 – IMT Atlantique (taught in English)

SNEAM/ANWM	MSc in Advanced Nuclear Waste Management	Year2	
		Sem1	Sem2
CODE	SCIENTIFIC AND TECHNICAL MODULES	European Credit - ECTS	
ST121WS	Wastes, conditioning and Storage Inventories of waste and classification Waste characterization and conditioning Storage concepts and sites	7	
ST221DD	Dismantlement and Decommissioning of Nuclear Installations Dismantlement strategies and projects Dismantlement scenario Radiological inventories Costs assessment	4	
ST321GD	Geological disposal Geology and hydraulics Repository technology Engineered barrier system Phenomenology of evolution	7	
ST421SA	Safety Geochemical and transport modelling Transfer to human beings Performance and safety Radioprotection Environmental impact	5	
	SOCIAL SCIENCE AND MANAGEMENT MODULES		
SSG21NS	Nuclear: Management, Safety and Society Institutional framework, actors Socioeconomic and ethical aspects Sustainable nuclear development Project management	5	
	TRAINING FOR THE CORPORATE WORLD		
FEM22MT	Master thesis		30
	FOREIGN LANGUAGES		
LVI21FL	French language and Culture	2	
	INDIVIDUAL / SOCIETY PROJECT COURSES		
CEP21	Competencies evaluation and professional project	X	



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International Master year 2 – IMT Atlantique (taught in English)

SNEAM/NEPIA	MSc in Nuclear Energy Production and Industrial Applications	Year 2	
		Sem 1	Sem 2
CODE	SCIENTIFIC AND TECHNICAL MODULES	European Credit - ECTS	
ST121RT	Reactors and advanced Nuclear Technologies Nuclear reactors Physics of neutron transport Thermohydraulics Particles beam and radiation production Particles beam and radiation qualification	7	
ST221EP	Engineering in Nuclear power plants Thermohydraulical simulation Operation Safety Detailed study of nuclear materials	7	
ST321EI	Engineering in Standard Nuclear Installations Safety Technical applications review Security applications and waste characterization	5	
ST421SW	Safety, radioprotection and Waste Management Safety of the fuel cycle installations Non-proliferation Radioprotection Specific waste management in industrial environment	4	
	SOCIAL SCIENCE AND MANAGEMENT MODULES		
SSG21NS	Nuclear: Management, Safety and Society Institutional framework, stakeholders Socioeconomic and ethical aspects Sustainable nuclear development Project management	5	
	TRAINING FOR THE CORPORATE WORLD		
FEM22MT	Master Thesis – research or Industrial Internship		30
	FOREIGN LANGUAGES		
LVI21FL	French language and Culture	2	
	INDIVIDUAL / SOCIETY PROJECT COURSES		
CEP21	Competencies evaluation and professional projects	X	



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International Master year 2 – IMT Atlantique (taught in French)

SNEAM/RIA	MSc in Ionizing Radiation and Medical Physics	Year 2	
		Sem1	Sem2
CODE	SCIENTIFIC AND TECHNICAL MODULES	European Credit - ECTS	
X9PA010	Nuclear Reactions and Radiations	4	
	Nuclear reactions		
	Particle Beams and Radiation Production		
	Radiation Interaction in Matter		
	Detection		
X9PA020	Mathematical Tools and Computer Simulation	4	
	Mathematical Tools for Data Analysis and Image Processing		
	Monte Carlo Simulation Technique		
	Computing Project		
X9PA040	Effects of Ionizing Radiation and Radiation Protection	2	
	Biological Effects of Radiation		
	Radiolysis		
X9PA110	Basics of Medical Physics and Imaging	2	
	Introduction to Medical Physics		
	Introduction to Medical Imaging (including MRI and Ultrasound)		
	Radiopharmaceutical and Clinical Applications		
X9PA120	Medical Imaging Techniques	4	
	Radiology		
	Nuclear Medicine		
	Image Processing		
	GATE Simulation		
X9PA130	Dosimetry	4	
	Fundamentals on Dosimetry		
	Dosimetry Protocols		
	Calculation Algorithms		
	Dosimetry in Radiology, Brachytherapy and Nuclear Medicine		
	SOCIAL SCIENCE AND MANAGEMENT MODULES		
SSG21NS	Nuclear: Management, Safety and Society	5	
	Risk Assessment		
	Sustainable Nuclear development		
	Project Management		
X9PA050	Applications, Quality and Project Management	3	
	Industrial Applications		
	Quality Approach		
	Project Management		
	TRAINING FOR THE CORPORATE WORLD		
FEM22MT	Master Thesis – research or Industrial Internship		30
	FOREIGN LANGUAGES		
LVI21FL	French language and Culture	2	
	INDIVIDUAL / SOCIETY PROJECT COURSES		
CEP21	Competencies evaluation and professional projects	X	



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Master of engineering year 1 – IMT Atlantique (taught in French)

NTSE	Nuclear Engineering : Technologies, Safety, Environment	Master Year 1	
		SEM1	SEM2
Scientific and Technical courses		European Crédit - ECTS	
	Software Integration	M.Tisi	3
	Software engineering and object oriented programming	R.Debruyne	3
General Scientific and Technical course			4
	Energy and Environment : challenges and strategies	A.Joubert	
Scientific and Technical courses (specialization)			
	Physics of ionizing radiation	V.Métivier	4
	Instrumentation for Nuclear Physics	D.Thers	4
	Simulation in the nuclear field	JP.Cussonneau	4
	Fuel cycle and environment	A.Abdelouas	4
	Radiochemical methods and metrology	J.Champion	4
Social Science and Management courses			
	Organization studies	S.Ghaffari	4
Social Science and Management courses (only one to be chosen!)			3
	Innovation Management	S.Ghaffari	
	Industrial Design	G.Minguet	
	Human, Technology and Society	AF. Kogan	
	Innovation economics	S.Bretesche	
	Business history	M.Devigne	
	Negotiation	M.Devigne	
Generic Methods for Engineers courses (only one to be chosen!)		A. Villot	4
	Statistics -----Optimization		
	Statistics -----Data Analysis		
	Statistics -----Experimental Methodology		
Introduction to industrial engineering, tools and methods from industry courses (only one to be chosen !)		D.Lemoine	3
	Industrial and Logistic Process of the Vast Company-----Working in an international context		
	Industrial and Logistic Process of the Vast Company-----Managing a project		
	Industrial and Logistic Process of the Vast Company-----Quality, Safety and Environment		
	Industrial and Logistic Process of the Vast Company-----Entrepreneurship		
	Industrial and Logistic Process of the Vast Company-----Managing commercial relations		
	Health and Safety at work (compulsory for all)		
Foreign Languages courses		S.Evans	
	English and Second Foreign Language		3 3
Project 3		E.Voisin	
	Short Project in Industry		5
Project 4		M.Tazerout	
	Scientific and Technical project (60h)		5
Training for the corporate world		N.Poedras	
	International Internship		3
Sports Activities		L.Mony	
	Sports Activities		+2 +2



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Master of engineering year 1 – IMT Atlantique (taught in French)

STAR	Systems and Technologies Applied to nuclear Reactors	Master Year 1	
		SEM1	SEM2
Scientific and Technical courses		European Crédit - ECTS	
	Software Integration	M.Tisi	3
	Software engineering and object oriented programming	R.Debruyne	3
General Scientific and Technical course (only one to be chosen!)			4
	Complex system engineering	M.Yagoubi	
	Energy and Environment : challenges and strategies	A.Joubert	
Scientific and Technical courses (specialization)			
	Physics of ionizing radiation	V.Métivier	4
	Instrumentation for Nuclear Physics	D.Thers	4
	Simulation in the nuclear field	JP.Cussonneau	4
	intermediate course in nuclear physics	PB. Gossiaux	4
	Reactors	G.Batigne	4
Social Science and Management courses			
	Organization studies	S.Ghaffari	4
Social Science and Management courses (only one to be chosen!)			3
	Innovation Management	S.Ghaffari	
	Industrial Design	G.Minguet	
	Human, Technology and Society	AF. Kogan	
	Innovation economics	S.Bretesche	
	Business history	M.Devigne	
	Negotiation	M.Devigne	
Generic Methods for Engineers courses (only one to be chosen!)		A.Villot	4
	Statistics -----Optimization		
	Statistics -----Data Analysis		
	Statistics -----Experimental Methodology		
Introduction to industrial engineering, tools and methods from industry courses (only one to be chosen !)		D.Lemoine	3
	Industrial and Logistic Process of the Vast Company-----Working in an international context		
	Industrial and Logistic Process of the Vast Company-----Managing a project		
	Industrial and Logistic Process of the Vast Company-----Quality, Safety and Environment		
	Industrial and Logistic Process of the Vast Company-----Entrepreneurship		
	Industrial and Logistic Process of the Vast Company-----Managing commercial relations		
	Health and Safety at work (compulsory for all)		
Foreign Languages courses		S.Evans	
	English and Second Foreign Language		3 3
Project 3		E.Voisin	
	Short Project in Industry		5
Project 4		M.Tazerout	
	Scientifical and Technical project (60h)		5
Training for the corporate world		N.Poedras	
	International Internship		3
Sports Activities		L.Mony	
	Sports Activities		+2 +2



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Master at UGM

M.Eng. in Engineering Physics Focusing on Engineering of Nuclear Technology Systems

Code	Course Title	Credits	Schedule of Activity			
			Year 1		Year 2	
			Sem 1	Sem 2	Sem 1	Sem 2
MATHEMATICS AND SCIENCE						
TKNF 176111	Multiphysics System Analysis	3	3			
TKNF 176112	Engineering Mathematical Analysis	3	3			
ENGINEERING FUNDAMENTALS						
TKNF 176221	Experimental Engineering Methods	3		3		
TKNF 176222	Computational Engineering Methods	3		3		
TKNF 176123	Special Topics in Engineering Physics	2	2			
NUCLEAR ENERGY TECHNOLOGY						
TKNF 176241	Nuclear Reactor System Engineering	3		3		
TKNF 177142	Engineering of Nuclear Safety and Security System	3			3	
TKNF 177143	Engineering of Nuclear Material Processing System	3			3	
TKNF 177144	Engineering of Nuclear Installation Management System	3			3	
TKNF 177145	Radiation Protection Engineering	2			2	
TKNF 177146	Radiochemistry	2			2	
GENERAL EDUCATION						
TKNF 176101	Entrepreneurship and Intellectual Property Rights	3	3			
TKNF 176202	Research Design and Ethics	3		3		
FREE ELECTIVE COURSE						
TKNF 177281	Sustainable Engineering	2				2
INDIVIDUAL PROJECT WORK						
TKNF 177299	Thesis	8				8
Total Credits		46	11	12	13	10